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Medical Times

A Monthly Journal of Medicine, Surgery and the Collateral Sciences

Published by THE MEDICAL TIMES COMPANY at 95 Nassau Street

VOL. LII, No. 6 NEW YORK, JUNE, 1924 Twenty-Five Cents a Copy Two Dollars a Year

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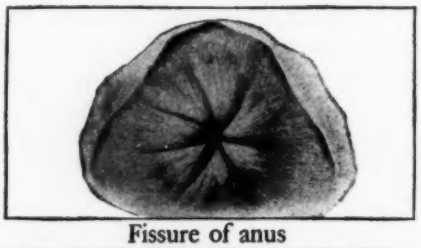
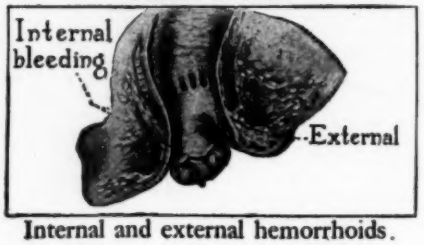


Fissure of anus

Cryptitis (focus of infection)



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Vol. LII., No. 6 | New York, June, 1924 | Twenty-Five Cents a Copy Two Dollars a Year

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Some Opinions on Cancer, Its Origin and Treatment

A Preliminary Statement

HARRISON TAYLOR CRONK, M.D.

New York.

During a lengthy and active service as bacteriologist of the New York Department of Health, experience in epidemic situations brought me into an intimacy with protozoic life which held me in fascination and wonderment.

My duties pertained to known bacterial organisms, and with other observers I early recognized paratyphoid *a* and *b*. The miscroscopic field with all its denizens held so much that might be of moment to human health aside from already recognized factors in disease causation, that the interest then excited never forsook me in later years.

As a result of continued interest and application my belief gradually focused upon protozoa as cause for malignancy. That others bent in similar direction had been and were being diverted from research in that direction did not deter me, for changing fashions of research have not generally militated in favor of desired result as all of us know.

Regardless of the opinions of some of my esteemed compeers, there has been nothing adduced contrariwise to protozoologic origin of malignancy. The negation assumed has been wholly non-affirmative. It has ended there save as prejudice, based upon old reason or inheritance of archaic fundamentals of research, has negatived from prejudice only.

Accordingly, I set down certain findings, leaving verdict to the judgment of my readers and welcoming intelligent, scientific criticism, that out of controversy, should controversy arise, there may eventuate that betterment of humanity's welfare which is the goal we all are seeking.

Protozoa and Their Part

The pathologic part some of the protozoa play in modern medicine need not be discussed. *Plasmodium Malariae* and *Filarius* suffice to give us elemental ground. How then about the supposedly benign protozoa? Are they always innocuous in spite of their fabled benignity, or can these innocent habitants of a human host assume under favoring condition, attitude hostile to human welfare? They can! Quite as much as the commonest bacilli of infection. They do! Quite as much as *bacillus coli communis*.

Now my belief is that malignancy is caused specifically by one of these supposedly innocent protozoa—that protozoon being *Trichomonas*. Forget for the moment that it is *T. buccalis* when found in the mouth, *T. intestinalis* or *T. vaginalis* when found in *situ*. View T. for what it is, an invader of generally specific identity wherever found and regardless of an added flagellum or two.

I am not suggesting that since *Trichomonas* has its favorite habitat in the duodenal end of the small intestine and is a common tenant of the vagina, this gives reason for a preponderance of gastric carcinoma in the male and uterine carcinoma in the female. T. is found generally, as discovery in blood, urine and other body fluids verifies. Further, having entrance and exit to various parts of the body at free will, once it becomes a body denizen, its remarkable motility gives it means for free range.

Here let us consider the proclivities of this supposedly benign parasite. Ever present, because of its pertinacity of self-preservation even in distilled water, it has a peculiarity of life as concerns multiplication, which is of much moment.

Distinctive among known protozoa it has a specific blood lust. T. feeds upon cell globulins. Incapable of rapid multiplication on ordinary culture media, it propagates amazingly when to that media fresh blood is added, or in media of which the cell globulins, upon which it thrives, are a component part. Is it a coincidence that Ewing and other observers find a paucity of globulin in cancer cells?

Malignancy is characterized by localized growth, ultimating in destructive degeneration, and accompanied by metastatic invasion of parts, both adjacent and remote. Old theory, still harbored by many, fixes this condition of mystery as cell madness—normal cells gone wild, devastating and preying upon their innocent neighbors until fatality results. That sort of notion fits into mediaeval

way of thinking, but is hardly acceptable today in spite of certain remaining devotees. Cells don't go mad of themselves anymore than do human entities.

The Etiology of Cell Growth in Malignancy

What causes this cell growth of malignancy? A physical condition reached where *Trichomonas* finding favorable site for propagation, fixes itself beyond means of body resistance to destroy or encapsulate. There results immediately not only the usual defense process of active phagocytosis but, since a sterner invader than trifling local infection is to be dealt with, the medicatrix summons to aid its heavier battalions. There begins a barrier erection composed of connective tissue cells. The microscopic picture of malignancy tells the story to every pathologist.

With slowly yielding fight against the invader, barrier erection continues. Fed with the globulin food upon which it alone can propagate, parasite multiplication results and growth continues. The last act of the drama announces itself when weakened resistance permits invasion of the ever present bacteria of suppuration and lingering death with all its foul concomitants brings final curtain.

Latent ability of the body organism to create cell barrier growth symbolic of cancer manifestation has been slow in its recognition, except in the healing process of wounds. Perhaps we have been too slow in recognition. Example from parasitic inoculation is sufficiently proven with the protozoon *Coccidium* as has been demonstrated in rabbit coccidiosis. Though coccidiosis has no malignancy evident in it—since *Coccidium* is truly benign as far as malignancy is concerned—it nevertheless does prove that protozoa can call into being cell proliferation pertinent to our subject.

A significant characteristic of *Trichomonas,* even in its benign existence, is a habit of wandering and clustering under its vagabond routine as an innocuous body denizen. This habit well accounts for the metastatic features of malignancy. What more logical than that these Goths and Vandals of protozoic life should wander, colonize and create new areas of destruction? How tenable this, as against the mere unorganized cell madness of older theory.

Trichomonas shares with its fellow parasites the habit of evading discovery except under living (motile) condition. Dead or quiescent it is practically undiscoverable (e.g., amoebus dysentericus) fæcal matter containing these protozoa, for instance, must be preserved at body temperature to result in finding. Their similarity to certain white blood cells adds to hazard of identification and when blood containing the living parasites is hemolyzed and centrifuged, the tendency of *Trichomonas* to agglutination renders discovery quite negative.

This characteristic of *T.* common to other forms of amebic life can well lend justification to belief as to presence in the cells of cancer tissue although we must await further determination of research to confirm this. We know, however, that cancer cells, unlike the cells of normal tissue or diseased tissue other than malignant, do contain unidentified bodies in an apparently encysted state which are characteristic of cancer cells alone and which may well represent the residue of some bacillary or protozoic invader.

Hypothesising *T.* to be the inciting cause of malignancy, at a date earlier than present confirmation of belief, I began experiment in medication aimed at their destruction.

Here was a supposed invading presence which could be isolated and propagated under globulin feeding outside its human habitat. Its prompt yieldance to phenols was soon demonstrated.

The Use of Phenols in Treatment

The potency of phenols in destruction of parasitic life outside the body had such commendable record as to give it first place in my consideration within, despite certain shortcomings demonstrated upon internal administration.

My research having given me intimate knowledge of malignancy in the lower animals through investigation and experiment at the New York Veterinary Hospital, valuable added information was furnished on phenol's merits and demerits. Summed up this proved their perfection of capability when applied in such form of sufficient strength as to kill the parasite without harming the host. Cruder phenols, for instance, are wonderful parasiticides but when applied externally for cure of mange in dog or cat, the beast disposition to lick the affected area too often leads to fatality. The problem thus became one of preserving full parasiticidal power in form where by systemic introduction no harm would result to normal tissue or normal life process.

The difficulty of such achievement is not small, as those experienced in pharmaceutical work well know. The object, however, was attained through a combination of creosote, eucalyptol and camphor, further details of which will be treated more exhaustively in a subsequent article. Some of my readers, being familiar with the values of eucalyptol in effect upon the malarial parasite where quinine medication is ill borne, will note the trend of my endeavor.

By injection of AO, as my progressive laboratory lettering had denominated my finally successful combination, I found gratifying results, which have been so convincing over several years as to warrant publication of the opinions now expressed.

Intra-cellular injection in the tissue commencing with five minim doses of the clear fluid and continuing daily with gradual increase to ten and fifteen minims have given excellent, and I could almost say, remarkable results, producing stasis or decrease in malignant growth according to stage of advancement.

Alleviation and Prolongation of Life

Accurate observation has proven utter absence of unfavorable symptoms from the administration. On the contrary, even in cases where last stage symptoms produce almost intolerable conditions of malodor and discharge, prompt alleviation is registered with corresponding increase in physical as well as mental comfort. Life too is prolonged under conditions more happily borne.

The terrible inroads caused by cancer are progressing with such rapid pace as to bestir us all in direction of palliation and ultimate cure. New York City's mortality records the toll as something like one death in each twelve. The alarming prevalency among those whom society regards as its most valued members makes the toll more noticeable because there is direct ratio in cancer's prevalence with waning physical resistance hence after fifty is the harvest time.

My observations lead me to make no division line between sarcoma and carcinoma. All malignancy is, in my opinion, definitely protozoic in origin. If such be the case—and my applied medication confirms belief—our effort in creating still greater potency of medication along line suggested here must continue to lead us nearer the sought for goal.

More than a decade of intensive work is back of this announcement. In a later article will be given the history of cases under observation with this treatment. Supplementary treatment has of course been employed but with strict regard to non-obscuration of fundaments.

12 Fifth Avenue.

Cancer and Its Spread from a Geographer's Standpoint

JACQUES W. REDWAY
METEOROLOGICAL LABORATORY,
Mount Vernon, N. Y.

A quarter of a century ago medical publications noted a marked increase in the number of deaths from cancer and the subject has been one of concern in medical circles ever since that time. But not until within a very few years has the daily newspaper, the greatest of all factors in the education of the public, brought the facts of the case before the public as they have been presented in the past year or two.

The record of vital statistics compiled by the Federal Census Bureau now includes about 85 per cent. of the population of the United States, and the yearly reports are probably the most comprehensive published. The last complete report issued is for the year of 1920, and the statistics therein are used in the preparation of this article. The complete reports for 1921 is not yet ready; the report for 1922 is incomplete. The figures for 1920 answer every purpose for comparison; unless noted to the contrary, the computations are on the basis of 100,000 of population.

In the death toll of 1921 cancer stands third in the list. The deaths therefrom aggregate in number 76,274. They were surpassed by deaths from organic diseases of the heart, and by tuberculosis. But the conquest of tuberculosis is in sight and the death rate is steadily decreasing. Cancer on the other hand is unconquered and the rate has steadily increased. In the countries dominated by western civilization self-preservation does not seem to be the first law of life. Few people—less than one per cent.—die of old age; the others kill themselves or are killed by their own indiscretions.

Cancer is the greatest of pathological mysteries. For more than half a century pathologists have worked as worked the legions Cæsar; nevertheless, nothing fundamentally causative or curative has been discovered. Slowly and surely, year by year the death rate from cancer has increased. In 1900, when the registration area contained half as many people as at the present time, the rate was 63 per 100,000 of population; in 1921 it was 86, a gain of one-third.

In the growth of the animal body the organizations for want of a better name termed cells are the units of structure, and cancer seems to be intimately connected with the distribution—the distribution rather than their pathology—of these cells. One distinguished pathologist puts it: Cells deposited out of place in the human body. The American Society for the Control of Cancer defines it: The cells forming a cancer are outlaws, because they refuse to obey the laws of nature to remain in their normal spheres, and to perform their natural functions.

Quite recently the alleged increase of cancer has been questioned, giving as a reason that the increase is merely apparent and is due to the fact that cases nowadays are more carefully diagnosticated than in times gone by. Such a theory will not stand examination. Death rates are based upon the number of deaths and not upon the number of cases. There may be errors of diagnosis at the beginning, but when a patient dies of cancer there is but little chance to mistake the cause.

That cancer is to be classed among the old-age diseases goes without saying. Here are the rates with respect to age and also with respect to sex:

Age	Male	Female
5 to 19 years	0.2	0.2
20 to 24 years	0.3	0.7
25 to 34 years	0.7	3.5
35 to 44 years	3.9	19.8
45 to 54 years	12.8	46.2
55 to 64 years	34.2	84.6
65 to 74 years	71.7	115.5
75 years and over	190.4	218.6

The foregoing are crude rates; adjusted rates would be slightly lower but the ratios would not be materially changed. For all ages, in 1920, the ratio was 58 per cent females to 42 per cent males.

Concerning its prevalence among oriental peoples statistics are incomplete or are wanting altogther. In a score or more of books descriptive of oriental countries the disease is not mentioned; on the other hand, physicians who have lived in oriental countries declare that cancer is very rare. In western Europe the statistics are not always comparable with those of the United States, but in a period of twenty-five years the ratio of increase in England and Wales does not differ materially from that in the United States. The prevalence and increase seem to be confined to western Europe and the United States. Race per se does not seem to be a factor, at least so far as the negro is concerned. In his own environment the negro may be immune, but in the United States he is not.

In the United States for 1920, the highest death rates from cancer are in the northern group of states, where the rate is generally above 85. But this does not apply to Montana whose rate is 51 or half that of New York State—101 crude, or 92 adjusted. New York and the New England States apparently are the high spot of cancer, running from 79 in New Hampshire to 88 in Rhode Island, adjusted rate. The adjusted rate for Montana would be materially greater than the crude rate—about 60 or over.

The difference between crude and adjusted rates are sometimes great enough to lead to important conclusions. Crude rates are computed on all the deaths occurring in a given locality—residents and non-residents. Refined or adjusted rates exclude the deaths of non-residents, especially those of decedents in institutions whose inmates are drawn from external areas. In general the effect of adjustment is to lower the rates in high spots and raise them elsewhere. This rule is not infallible however; for, in the comparison of rates, age and sex must be taken into consideration also; and it is not unlikely that the increased expectation of life may be a new and uncorrelated factor.

From north to south the rate decreases almost with regularity, and this is apparent when the figures are applied exclusively to the white population. Now if the problem is one of climate the exceptions should be trivial; and, in the case of the Pacific Coast states, the discrepancy is explainable. The adjusted rate of Washington was 77; that of California was 87. But Southern California is a Mecca for retired people of wealth—almost always good livers—and the age excess just about balances the greater prevalence in the southern part. But, allowing for all adjustments, the rate for Montana, lowest in the coldest state, is far in excess of that of

(Concluded on page 142)

The Healthfulness of Old Fashioned Molasses as a Food and as a Laxative

WILLIAM EDWARD FITCH, M.D.
New York

Not so many years ago molasses was one of the principal foods of the United States, or for that matter the North American continent. That was the day when molasses was made by pressing the juice from the sugar cane, and boiling it to a crystal in large open kettles. The crystalline mass was placed in perforated hogsheads where the liquid was allowed to run off, leaving in the hogsheads what was known as "open kettle, or muscavado sugar." The liquid which was allowed to run off was in the nature of a by-product, and was a real heavy syrup, known as open kettle molasses.

This was the molasses that our grandmothers knew and used, and which in those days was to be found on every table. Today efficiency has lowered the quality of molasses by providing methods for more thoroughly extracting the sugar. There is still, however, some of the good old molasses to be had. A little is produced in Louisiana, but it principally comes from the West Indies. People, who are acquainted with good molasses, are still demanding the old fashioned molasses, and many plantations have sacrificed the amount of sugar, which they can produce, in order to make a corresponingly greater amount of real molasses—"grandma's molasses."

The history of molasses is interesting, and can be traced back to mythology.* The first mention of sugar, as well as molasses, is to be found in Hindu mythology, where we find that a hermit created sugar cane to be used as a heavenly food by the Rajah in an earthly paradise, especially established for this most worthy Prince. The Rajah wished to go to heaven during his life time, but the ruler of paradise refused to receive him. Consequently, the hermit, in order to please his royal highness, created an earthly paradise for him—"This heaven on earth" did not last long, no longer perhaps than such celestials endure today, and about all that was left of his downfall was the sugar cane, which passed on as a perpetual memory to the miraculous hermit.

Molasses and sugar is believed to have been known to the ancient hebrews. The Bible records the following:

"And of sweet calamus two hundred and fifty shekels." —Exodus XXX: 23.

"To what purpose cometh there to me incense from Sheba, and the sweet cane from a far country?"—Jeremiah VI: 20.

Later in history we find that Alexander the Great and his followers found growing in India a weed out of which honey could be produced without the aid of bees. This so-called "honey" was none other than cane syrup or molasses.

When Marko Pollo visited China in the thirteenth century the Chinese were making sugar, and open kettle molasses, very much in the same manner as they are being made today in certain parts of the West Indies—that is by boiling the juice of sugar cane in an open kettle over a barn fire, and after concentration, allowing the molasses to run off from the sugar.

In 1493 Christopher Columbus introduced sugar and molasses into Santo Domingo. This was the first time that they were ever produced in the Western Hemisphere. When North America became settled molasses commenced to play an important role in its history. Sailing vessels plying between New England and the West Indies carried to New England cargoes of molasses, which was fermented and distilled into rum. The rum was sent to Africa to be exchanged for slaves. These slave ships returned to America via the West Indies where some of the slaves were landed and bartered for more molasses. The balance of the slaves were sold in the South of North America.

Introspecting Northerners discuss the subject of slavery in the South with less frenzy and one sided indignation when they remember that it was New England ships, and New England rum that brought and bought the slaves for the South. A current phrase of the day used to illustrate the hypocrisy of those engaged in this trade, "Missionaries on deck and rum in the hold."

The production of molasses was in colonial days as important an item as sugar; if not more so.—For witness a passage from Adam Smith's "Wealth of Nations" published in 1776, "It is commonly said that a sugar planter expects rum and the molasses should defray the whole expense of his cultivation, and that his sugar should be of clear profit." Molasses was considered a prime article of food in those days, and also throughout most of the nineteenth century, particularly in the early part of the last century in our great merchant marine was molasses considered almost a delicacy. The American clipper ships, the pride of the seas, that battled their way around Cape Horn always carried molasses as one of their principal rations, and it was a serious matter indeed if the molasses supply gave out. Richard Henry Dana, Jr., in his famous book "Two Years Before the Mast," says of his life as a sailor:—

> "The only time when we could be said to take any pleasure was at night and morning when we were allowed a tin potful of hot tea (or as the sailors significantly called it "water bewitched") sweetened with molasses."

In his diary in the same book we find this entry:—

> 'Thursday—December 25th—(1834). This day was Christmas, but it brought us no holiday. The only change was that we had a plum duff for dinner, and the crew quarreled with the steward because he did not give us our usual allowance of molasses to eat with it. He thought the plums would be a substitute for the molasses, but we were not to be cheated out of our rights in this way."

It is regrettable to say that much of the molasses that is made and sold today is hardly preferable to plums. However, there is still obtainable some of the real old fashioned open kettle grandma molasses that sailors "would not be cheated out of."

The amount of molasses consumed by people varies in different localities. In the metropolitan areas in the United States comparatively little molasses is consumed. This is due largely to the fact that city people purchase molasses in cans, and not in barrels, as do country people, and until recently only an inferior quality of molasses has been available in cans. For sometime molasses blenders and manufacturers have been endeavoring to find a method for canning high grade molasses, this grade being more liable to sour and ferment than the lower grades.

* I acknowledge obligation to a published address by Mr. C. W. Taussig for a portion of the historical matter and methods of manufacture incorporated in this article.

The problem has recently been solved, and it is now possible to secure real old fashioned molasses in cans. This will undoubtedly increase the molasses consumption. In the country districts, particularly in the South, and some of the Northern States, New York, Connecticut, Vermont and Maine, the use of molasses is fairly large. The country people are satisfied to buy molasses in bulk, and they have, therefore, been able to secure right along the "good old fashioned sugary" molasses.

The uses to which the house wife puts molasses varies with the locality. In the cities, what little molasses is uesd, is principally for baking. In the country it is not only used in baking, but as a pleasing substitute for butter and for jam. In certain sections of the country when one stops at a small wayside inn, and orders his coffee he will be asked whether he wants long or short sweetening. The "short sweetening" is sugar, and the "long sweetening" is molasses. In Newfoundland molasses today is still one of the principal ingredients for sweetening tea and coffee. In the South the consumption of molasses is large, and there it is used in a multitude of foods. Molasses pie is considered a great delistates. All Southern families serve baked hams with cacy in Alabama, and Louisiana as well as other Southern molasses. In New England large quantities of molasses are used in baked beans, apple pie and ginger bread.

Molasses is of special interest from a chemical and dietetic point of view, because of the variety of ways it has been utilized as a food. Molasses contains not more than 25% of water, and not more than 5% ash, and the importance of molasses as a food is seen when it is realized that about 25% of the sugar present in the original juice is found in the final molasses. The "mother liquor" as the chemists call it, from which sugar has been crystalized, is the "true" molasses. It contains besides sucrose, some of the uncrystalizable sugar of the original juice and all the invert sugar produced in the process of manufacture, besides those soluble impurities, the nitrogenuous elements, and mineral salts of the original juice.

Old fashioned West Indies molasses is made by the open pan method of evaporation of the original juice from which no sugar has been removed by crystalization. During the evaporation process the scum is meticulously removed and the final syrup is strained, no lime or sulphurous acid is used. According to Wiley[1] this molasses has the average composition as shown in the following table:

Total solids	75.0	per cent.
Water	25.8	" "
Ash	1.2	" "
Sucrose	52.0	" "
Reducing sugar	17.6	" "

Molasses, as we have already explained, was formerly understood to be the "mother liquor" remaining from the manufacture of sugar. Due to the introduction of modern methods into sugar house practice, there has been a steady tendency to remove more and more of the sucrose with the result that the amount of molasses is decreased, and its sugar content lowered. To illustrate the difference in composition between molasses from successive crystalizations, the following table from Wiley[2] clearly depicts the analysis of first, second and third molasses.

Composition of First, Second and Third Molasses.

	First molasses	Second molasses	Third molasses
Water	20.00%	20.00%	20.00%
Sucrose (cane sugar)	53.60%	41.70%	31.70%
Dextrose (glucose)	8.76%	12.00%	15.00%
Levulose (fructose)	8.00%	12.50%	16.50%
Acids and gums	4.50%	6.50%	8.20%
Proteins	0.20%	0.25%	0.30%
Amids	0.94%	1.50%	2.00%
Ash	4.00%	3.35%	6.30%

According to the definitions and standards of the Association of Official Agricultural Chemists, molasses is the product left after separating the sugar from the "masse cuite,"—melada, mush sugar,—and contains not more than 25% water and not more than 5% ash. This standard would practically confine the term "molasses," as a commercial designation for human food, to material of the nature of the "first molasses" of the "mother liquor" of modern sugar manufacture.

Varieties of Molasses

The real New Orleans molasses, which is now practically non-existent, is the product of the manufacture of sugar in the old fashioned way. The crystalization is brought about by evaporating the juice in a large, flat, open kettle with a slow fire and without the use of vacuum pans. Crystalization does not begin in the kettle but when the concentrated liquid is placed in tanks, after which the mass is broken up and placed in large hogsheads with perforated bottoms, covered with clean straw or fragments of the dried stalks of sugar cane remaining after passing through the grinding and crushing cylinders. After these hogsheads are filled with the crystalized sugar mixtures, through the action of gravity, the liquid molasses gradually percolates through the bottom of the hogshead and is collected and stored. This natural separation of the molasses makes a product of exquisite palatability and a delectable high grade food product. The New Orleans molasses of the present day is made by a different process and is quite different in character and wholesomeness to the older method.

With the introduction of modern methods of sugar manufacture by the use of the vacuum pans and centrifugal process, larger quantities of sugar are now obtained in a crystalizable form than by the older methods, but the quality of molasses is more or less impoverished and contains more impurities. It is the rule now to secure at least three crystalizations (a) *"First molasses"* is the result of placing the crystalized sugar from the vacuum pans into the centrifugal machine. Usually this molasses is diluted to a syrup and reboiled with fresh clarified juice direct from the sugar cane, from which a second portion of sugar is recovered; or the molasses may be boiled separately, resulting in a second crystalization and the sugar separated by centrifugalization, the molasses from this second process is known as (b) *"second molasses."* The (c) *"third molasses"* is made by reboiling the second molasses to a thick consistency, transferring it to a warm room where a third crystalization takes place in from 60 to 90 days. The sugar from this crystalization is separated as before by centrifugalization. It is of still greater inferiority.

In Louisiana, the term "blackstrap molasses" is employed to designate the product obtained when making 96 test crystals for refining purposes, it is a very dark molasses[3] and is frequently diluted before it is offered for sale. The composition of this type of molasses is shown in the table below.

Composition of Blackstrap Molasses.

Cane sugar	34.2-36.6%
Invert sugar	29.7-32.0%
Ash	3.4- 6.4%
Undetermined	3.5- 8.0%
Water	18.5-23.5%

Molasses as a Food

Molasses contains all the substances in solution or suspension which were not separated by the gauze of the centrifugal machine. The sugar juice of the cane contains considerable quantities of sugars other than sucrose or common sugar, viz., an invert sugar, and a reducing sugar which consists of almost equal quantities of dextrose and levulose. The terms glucose and fructose are synonymous for dextrose and levulose. In molasses manufacture small portions of sucrose are converted into sugar of this kind thereby increasing its quantity. In the final crystalization, there always remains a certain amount of uncrystalizable sugar in the form of a rather heavy, viscous liquid containing crystalized particles. This natural, invert sugar which is in the juice, and the small portion formed from the sucrose during the process of manufacture, and the portion of sucrose which remains uncrystalized is the "mother liquid" which constitutes molasses.

The best golden syrup is made from sugar cane, and, is in reality the uncrystalizable residue from sugar manufacture. It contains large quantities of sucrose, dextrose, levulose, besides saline and other organic matters. A large percentage of the sucrose can be recovered by modern methods, but the demands for the syrup is so great that many manufacturers make no attempt to recover it and thereby turn out a superior and more wholesome product. The invert sugar is originated in part by the heat used in the process for concentrating the juice, besides commercial glucose is often used to prevent the sugar from becoming granular.

Sucrose—C_{12} H_{22} O_{11} cane sugar or saccharose, is a dextrorotatory disaccharide found in many plants, principally in the sugar cane. On hydrolysis a molecule of sucrose splits up into one molecule each of glucose (dextrose) and fructose (levulose). This process is often called "inversion" and the product invert sugar. When taken into the stomach, sucrose during the process of digestion, is changed into glucose and fructose, both of which easily digested and yield nutritive energy to the body. So far as known, neither the saliva nor the gastric juice contain any enzyme capable of hydrolizing cane sugar. Under normal conditions the sucrose of the food passes into the intestinal canal unchanged, and is there split by the sucrose of the intestinal juice, and the resulting glucose and fructose are readily and easily absorbed into the portal blood.

Glucose—C_6 H_{12} O_6, is a monosaccharid—dextrose, grape sugar, starch sugar, is a generic term for the six carbon atom carbohydrates—more particularly dextrose or grape sugar, also known as liver sugar, or diabetic sugar, it is readily soluable in water and alcohol, has a sweet taste less marked than cane sugar, and may be obtained from the sugar cane plant. It is largely used in the manufacture of syrups, as a substitute for malt and in the manufacture of confectionery and also as a medicine in diabetes.

Fructose—C_6 H_{12} O_6, a monosaccharid—levulose, fruit sugar; is another of the six carbon atom carbohydrates, widely distributed throughout the vegetable kingdom. It is found largely in the hydrolytic cleavage of cane sugar. It is found chiefly in combination with dextrose as "fruit sugar" its principal use has been in the treatment of diabetes, as much as one ounce daily has been administered without increasing the sugar content of the urine. Fructose may occur in normal blood, but probably only in insignificant amounts. It serves like glucose for the production of glycogen, and the fructose which enters the body either through being eaten as such, or as the result of the digestion of cane sugar, is mainly changed into glycogen on reaching the liver, so that it does not enter into the blood of the general circulation.

Digestibility

The first factor which determines the digestibility of molasses is its sugar content. No mater in what form sugar is taken into the stomach, it can only be assimilated as a monosaccharid-dextrose or levulose. Sucrose—cane sugar—is first converted from a disaccharid into dextrose and levulose a monosaccharid before absorption can take place. On hydrolysis, sucrose (saccharose) yields dextrose plus levulose. The process of hydrolysis takes place all along the entire alimentary canal, so that all of the disaccharids are eventually absorbed into the blood stream as monosaccharids.

As the result of numerous experiments physiologists are agreed that the carbohydrates (sugars) pass into the body by way of the portal circulation. Convincing proof of this statement is borne out by the fact that the sugar content of the lymph from the thoracic duct is the same as that of the arterial blood taken at the same time. An abundant quantity of carbohydrate food may be digested and absorbed during the course of a day all of which may be found in the blood in the form of dextrose which enters the portal vein and is distributed to the liver where it is stored as glycogen—and held in reserve for the future needs of the body.

By means of the storage capacity of the liver the sugar content of the circulation is kept quite constant. Professor Howell thinks the percentage maintained stands about 0.15%. However, when a very large amount of carbohydrate food has been ingested, it occasionally happens that the liver is unable to function sufficiently to recover and store the excess, and a condition known as hyperglycemia results—the excess passes through the kidneys and "alimentary glycosuria" ensues. It is important then, from a trophodynamic viewpoint, to consider the sucrose as *undigested* and the glucoses as *predigested* sugars.

At the Minnesota experiment station the digestion of sucrose was studied on five healthy men; five ounces per day were consumed by each man as a part of a simple mixed diet. The sugar showed a high digestability 98.9% of its total energy, on an average, was available to the body needs, with an increase of 25% energy without the slightest tendency toward any digestive disturbance. The protein content of the ration was more economically used than commonly. The nitrogen retention was increased 25%.

The tendency of sugar to undergo fermentation affects its behavior in the stomach. The varieties of fermentation likely to occur are:

(a) Alcoholic, resulting in the production of alcohol and acetic acid.

(b) Butyric, with the formation of butric acid.

(c) Lactic, producing an excess of lactic acid.

It is interesting to note that different sugars vary in the readiness with which they tend to undergo these different forms of fermentation. Some interesting experiments upon this point have been made by Robertson, Dietotherapy, Vol. 1, Pg. 633, according to the results worked out by him, fermentation to which sugars are liable occurs in the following order:

Types of Fermentations of Sugars.

Lactic	Butyric	Alcoholic
Levulose (most fermentable)	Levulose (most fermentable)	Maltose (most fermentable)
Lactose	Maltose	Invert sugar
Dextrose	Dextrose	Cane sugar
Invert sugar	Invert sugar	Dextrose
Cane sugar	Cane sugar	Levulose
Maltose	Lactose	Lactose

As the result of his research he draws the following deductions:

(a) In dyspepsia the absorption of carbohydrates is delayed, and therefore all sugars tend to ferment.

(b) In dyspepsia with lactic acid formation, one should avoid dextrose, levulose and invert sugar, and use cane sugar, maltose and lactose in moderate amount.

(c) In butyric fermentation lactose should be preferred.

(d) In alcoholic and acetic fermentation one should forbid invert sugar and levulose and give lactose.

Of all sugars, then, lactose is the least liable to fermentation—which emphasizes the point that a milk diet is desirable in all stomach disorders.

Assimilation

The assimilation of the sugar content of molasses has received considerable attention at the hands of physiological chemists and dietitians. As a result it is now the consensus of opinion that after entering the blood it is converted by the liver into glycogen. Just what becomes of it after that is more or less disputed, but every one is agreed that glycogen is the form in which sugar is stored in the body, for a time at least. It has been determined, however, by physiological experimentation that all suagrs are not capable of being converted into glycogen, and it is only those which can be directly fermented by yeast without first being changed into invert sugar. Of the sugars commonly consumed, cane sugar and lactose are not directly fermented by yeast, and in order that they may be stored up as glycogen, provision has been made for their previous inversion.

The fact that sugar may have a disturbing influence upon the digestion, does not mean that sugar itself is at all likely to escape digestion. "The readiness with which sugar is hydrolyzed by the sugar splitting enzyme of the intestinal juice, combined with the susceptibility of sugar to the attack of bacteria, makes it unlikely that much sugar will pass through the digestive tract unchanged." Pflugar, who has devoted so much attention to glycogen and other carbohydrates, says, "Undoubtedly sugar in the blood is heavily drawn on during violent exercise, hence the longing for it in a form that can be readily assimilated."

Good old fashioned molasses is ranked as a more available heat producer, and a more decided force conserver than starchy foods. As an aliment it is used in large quantities by both civilized and semi-civilized people. Molasses is a highly concentrated form of carbohydrate food easily digested, and almost entirely (100%) absorbed adding largely to the fatty tissues of the body. The sugar content of molasses is highly nutritious, and is a great source of muscular energy. It is important, of course, that molasses be high in sugar content, otherwise the food value is deficient. The negroes in the South, during the molasses making season, from chewing the pith of the cane stalk, and gormandizing the newly made molasses, rapidly increase in body weight, and muscular development. The mules also grow sleek and fat from eating the refuse around the cane mills. The sugar in the molasses and starchy foods generally are of about identical nutritive value. They are both hydrolized during the process of digestion and are therefore easily and readily assimilated.

The highly fattening properties of molasses, high in sugar content, is beyond question. It exerts a favorable influence on the health of growing children, supplying to them a source of body fuel, which they so much need. It has an additional advantage of being a form of fuel, which few children are likely to refuse. It is, as true muscular food, however, that molasses is of special importance. Carbohydrates are known to be the chief source of muscular energy, and a good old fashioned molasses from which little or no sugar has been removed is better calculated to fulfill this function than any other member of the carbohydrate group. The caloric value of old fashioned molasses, and a few other important every day foodstuffs are given below:—

Molasses	1,290	calories	per	pound
Sugar	1,860	"	"	"
Honey	1,785	"	"	"
White bread	1,225	"	"	"
Butter	3,605	"	"	"
American cheese	2,055	"	"	"
Porterhouse steak	1,270	"	"	"

It will be noted that molasses is higher in calorific value than is porterhouse steak. A point to be considered in determining the food value of molasses is the fact that it contains natural mineral salts, which have been almost entirely removed from white sugar, and from white flour. In the well balanced modern rations, molasses is an important factor as it not only supplies these mineral salts, which are deficient in most of the highly refined twentieth century foods, but it also supplies the necessary vitamines. The fact that in canning molasses a maximum temperature of 180° is used insures against the destruction of these mysterious vitamines without which human life cannot exist.

It is a well known fact, says Abel[4] in the Farmer's Bulletin No. 535, issued by the U. S. Dept. of Agriculture" that the harvester, laborer, lumberman, and others engaged in laborious work in the open air consume great quantities of sweets in their dietaries; largely in the form of puddings, sugar and molasses, always with benefit to them." In this class of manual labor sugar furnished the extra energy required for the muscular energy expended in such strenuous work. Brillat-Savarin long ago pointed out the interesting fact that the English added sugar and molasses to the ration of their race horses to sustain them in their trials for speed and efficiency. When molasses is added to the diet the ability to perform work is increased while fatigue and nitrogenous waste is lessened. Molasses is one of the most concentrated of all carbohydrate foods that contain a considerable percentage of mineral salts and vitamines.

The development of the sugar cane industry has had a far reaching effect on the national health. The tendency during the recent years has been to consume more carbohydrates and less fat, for fat is always an expensive form of food. The sugar content of molasses can replace fat in the dietary in the proportion of two-and-one-half parts of the former to one of the latter, but, of course, this does not follow that sucrose can perform all the functions in the body which are usually fulfilled by fat. Additional evi-

(Continued on page 141)

Report of Two Cases of Thyro-Glossal Cyst Operation and Cure*

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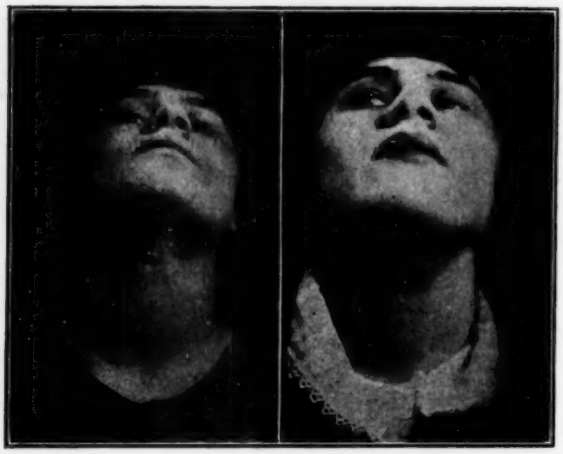
New York.

A thyro-glossal cyst, which is a cystic dilation of the thyro-glossal duct, is an absolete embryonic canal extending from the foramen caecum at the base of the tongue downwards behind the hyoid bone, and ending somewhere in the deep fascia in the front of the neck about the thyroid isthmus.



Case No. 1—Thyro-Glossal Cyst. Cure after operation
Recurrance

In the usual course of development of the embryo the duct disappears. Should the upper part remain unobliterated a cyst may form in the substance of the tongue or may be pedunculated and appear in the pharynx so that it can even protrude into the mouth. If the lower part of the duct is left patent a cyst may form in the median line of the neck anywhere between the hyoid bone and the sternum and is usually filled with mucoid or glary fluid.
The operation consists in following and dissecting out the duct behind the hyoid bone and if necessary dividing this bone in the middle line.

Case 1. E. B., age 19—female—appeared at my office on August 1, 1923 for the first time. Past history negative. Present history dates back to three years ago when she noticed the appearance of a small mass in the median line of her neck. This grew in size until it became as large as a walnut and at the end of six months was incised by a physician. This was followed by a copious discharge of fluid and pus, and continued discharging for two months. She was then operated upon with an apparently good result, the sinus remaining closed. At the end of three months, however, the mass reappeared in the neck and reopened itself, discharging a glary viscid material. A fistula resulted which continued discharging until she was reoperated upon. She was admitted to the New York Hospital on December 13, 1923 and operated upon, by Dr. E. H. Pool. The original scar was excised and the fistulous tract first injected with methyline blue and then followed to the hyoid bone. The hyoid was then split and the tract traced to the base of the tongue and completely removed. The wound healed by primary union and up to the present time there has been no return of the condition.

Case 2. B. S.—male, age, 6½ years—came to my office March 30, 1922 for the first time. His mother said that there had been a small growth on his neck which had appeared and disappeared three times after intervals of six and seven weeks.

Past history: Was a difficult delivery, baby weighing 4 lbs. at birth. Had diptheria when 11 months old and when two years old had whooping cough, measles and pneumonia. Examination of the neck showed a small mass about the size of a hazelnut, situated a little to the right of the median line. The consistency of the growth was soft, with the skin being freely movable over it. Examination of the mouth was negative. The tonsils were not enlarged. *x*-Ray and Wassermann tests were negative.

I kept the child under observation for two months without any treatment when the cyst completely disappeared. On September 1st, the cyst reappeared, remaining until the skin over it became red and thinned out, rupturing four weeks later. It then discharged a mucoid viscid material which turned into pus two days later, and continued discharging until April 18, 1923 when he was admitted to the New York Hospital and operated upon by Dr. E. H. Pool.

Case. No. 2—Thyro-Glossal Cyst. Cure after operation

The operation consisted in splitting the hyoid bone and dissecting out the fistulous tract to the base of the tongue. A good result apparently followed but six weeks after operation, the fistula reopened and discharged a serous fluid. This continued until three weeks later when it closed again and has remained closed since.

In the first case, the first operation was unsuccessful because the operator did not inject the sinus with methyline blue and neglected to split the hyoid bone, thus losing the tract before reaching its lowest point.

950 Park Avenue.

*Read before the Clinical Society of the Gouverneur Hospital, New York, February 28, 1924.

Chronic Suppurative Otitis Media With Perforation—Epilepsy*

CHARLES F. STOKES, M. D.
New York

CASE I.

Mr. J.M. aet 17, came to us over three years ago and gave the following history: At 1½ years he had an attack of bronchopheumonia following tonsillectomy and shortly afterward suffered from suppurative otitis media on both sids. The drums ruptured and there was a persistent discharge from both ears for nearly 12 years. Hearing was impaired from the outset growing gradually worse until 3 or 4 years before he came to us for treatment when he had to give up school and was not permitted to go into the street unattended.

Examination showed an anaemic boy, somewhat under nourished. There was nothing in his general history worthy of comment. Nares and fauces negative. On clearing away the pus in both ears, large perforations were seen, in fact, just the rim of the drum remained and the tissues here and there showed granulations.

He could hear the watch only on light contact on both sides: loud whispered voice 15 inches on the left side; 10 inches on the right. Bone conduction good.

His treatment began early in February, 1921, and from the start the improvement was striking. After six or eight treatments the discharge, from both ears, ceased, and only occasionally has there been a slight temporary return. He was radiated with *x*-rays twice a week for three or four weeks when the interval was lengthened. In over three years he has had about fifty treatments. By the end of the first month he was able to return to school. He could hear a loud whisper at 20 feet, the left ear, still the better, at 25 feet. His general condition has markedly improved.

He has held his gain in hearing for three years. He reports from time to time for observation and treatment; there have been periods of three and four months when he has had no treatment and his hearing remained good. He has had no local or general treatment other than *x*-rays. Dosage—8 m.a.—distance 24-30 inches—time 20-30 seconds. Backup 3½-4 inches—filtration 3 m.m. aluminum. Cross firing on pituitary from four directions.

Comment

The assumption is that in these cases the primary disturbance is in the endocrines as a result of infectious diseases, focal infections and other stresses leading to endocrine imbalance or dysfunction, this in turn disturbing the metabolism in their projected fields, there so lowering resistance that infection takes place. In the patient before us the infection was suppurative from the start. In others the process may be catarrhal and in still others (the otosclerotic type) no active inflammatory condition exists but structural changes of one sort or another involving the ossicles, their articulations, etc., non-inflammatory changes due to disturbed metabolism.

In cross firing with the small doses of *x*-rays from four points, on the pituitary, we take in the auditory fields as well as the pituitary and the other ductless glands such as the thyroid, parathyroids, thymus and pineal, at the head-end of the endocrine gradient.

It is obvious that the early improvement in hearing cannot be due to changes in the conductive apparatus; it must be due to sensitization of the perceptive field through changes in the semi-permeable membranes in the synapses, or end organs, or both. What part the radiated and stabilized endocrines, through their hormones, play remains to be seen.

The cessation of the discharge at about the end of the so-called latent period in *x*-ray burns is suggestive of changes in local chemistry possibly due to altered valency electron values.

The results in these cases are most satisfactory and are apparently permanent. As to the bactericidal effects of *x*-rays, the question has not been decided. Many believe that certain bacteria in tissues are destroyed by small doses of *x*-rays as it is frequently noted in clinical practice that ulcerated surfaces and glands heal kindly suggesting that growth of the bacteria has been hindered or completely arrested.

CASE II.

Miss V. C., aet 18 years; chronic suppurative otitis media, R.E. Appeared September 18th, 1922. Had usual childhood diseases, except scarlet fever. After a heavy cold about ten years ago, had pain in right ear with fever. Drum was perforated followed by what she described as a hemorrhage; later a foul purulent discharge followed which had persisted in spite of treatment for 10 years. Hearing was markedly impaired in that ear.

Examination revealed a large perforation in the lower hemicircle with the usual evidences of suppuration. The discharge was foul. She failed to hear lower tones; bone conduction good. She heard a test clock at 11 inches and a loud whisper at 34 inches. Immediately after treatment she could hear 128C; heard the same clock at 46 inches and a loud whisper at 16 feet.

Treatment: *x*-rays—Dosage 8 m.a.; distance, 30 inches; time 30 seconds; Back-up 3½-4 inches; filtration 3 m.m. of aluminum. Cross fired on pituitary from four directions. No other treatment employed.

September 20, 1922—treatment repeated. Patient returned January 8th, 1923 and reported that about ten days after the last treatment the discharge ceased, and that her hearing had improved in the interval. She heard a loud whisper at 33 feet. She had a single treatment, same technic.

July 18th, 1923, returned for a single treatment and reported no return of discharge. Hearing remaining good.

I did not see her again until March 13th, 1924 when she reported no return of discharge, hearing good. Same treatment.

The comments made in the first case apply to this patient. The immediate response to treatment was striking, and the improvement appear to be permanent.

CASE III.

Mr. J. R., aet 27 years, epilepsy. Family history negative. Up to 16 years of age his medical history was uneventful. At this time he fell on the pavement breaking his left tibia and fibula, and sustained a contusion in the occipital region. He did not lose consciousness. X-rays have shown no lesion in this region.

* Presented at the Clinical Meeting of the New York Electrotherapeutic Society, Academy of Medicine, April 2, 1924.

Ten months later he had a severe epileptiform seizure which was repeated about once a month for two years, when the attacks became less frequent and less severe. Later they increased in frequency until two or three years ago when he had one or more seizures daily of petit mal, and he was in this condition when we saw him, October 22nd, 1924.

He says he has been everywhere and has seen everybody. Has been psychoanalyzed and was finally given luminal, gr. $\frac{1}{4}$ daily and tincture of belladonna and sodium bromid.

On examination his general physical condition except the digestive tract appeared normal. O. B. Schellberg who has given the colonic irrigations reported as follows: (As a good deal of interest in the details of Schellberg's technic has been expressed I have incorporated them herewith):

Gastroenteroptesis.

General tubulary stasis.

Abdomen tympanitic.

Stomach distended—acted very slowly after administration of 8 oz. of water—produced no ileac waves.

Symptoms of large amount of feces in terminal ileum.

Coloptosis.

Cecum distended with feces and gas—mammoth in size.

Marked fecal stasis.

It required six gallons of solution to empty the colon partially. Was able to pass tube to the cecum at the first treatment.

Bacterial Examination

Large amount of B. Coli.

Large amount of Staphlococcus.

Large amount of aerogenes capsulatus.

Few Gram-positive bacilli.

This patient was irrigated with antiseptic solutions daily for twelve days and was given two compound cathartic pills nightly. The first day the colon was irrigated with a solution of zonite 1:100 at 37° C.; the cecum was douched with a solution of collene 1:8000 at 50° C. The second day the colon was irrigated as before and the cecum was douched with a solution, two teaspoonfuls to a quart, of

85% phosphoric acid	drams	iii
Hydrochloric acid (C.P.)	"	vi
Potassium permanganate	"	i

Distilled water enough to make one gallon. Temperature 50° C.

The third day the same treatment with solution of zonite was given followed by sodium phosphate 4 ounces and sodium salicylate ½ ounce as a cecum douche. These solutions are given in rotation every third day, acid and alkaline alternating to destroy bacteria in the intestine and to prevent any marked physiological chemical change from their use, as a general drainage is required.

Then at the end of the twelfth treatment an ounce and a half of castor oil containing menthol 3 grains and tincture of iodin 10 minims mixed, was administered at 4 o'clock in the afternoon, two C. C. pills at bedtime and a bottle of citrate of magnesia the following morning. The following afternoon the colon was thoroughly irrigated with sterile water followed by a quart of solution at 50° C. containing B. acidophilus and a teaspoonful of lactose was administered into the cecum. This cecum douche at its high temperature was given to produce ileac and colon waves. After the patient had expelled and the colon had quieted, a rectal plant of 4 ounces solution at 50° C. containing B. acidophilus and lactose was administered.

The irrigation and the culture planting was done three days in succession, then every other day for two weeks, the balance of the treatments being given weekly. The number of treatments in all is 32, covering a period from October to March.

In addition to the colonic irrigations he was given the Morse Wave to improve intestinal tone and his pituitary region was irradiated with *x*rays three times a week. Dosage: 8 m.a.; distance, 30 inches; time, 30 seconds; back-up, 3½ to 4 inches; filtration, 3 m.m. aluminum.

For two weeks after beginning treatment he had no seizures whatever and up to date he has had but 12 mild attacks, all but 3 of which he was able to avert.

As a result of too abrupt a withdrawal of the luminal he had three quite severe seizures, the last about a month ago. After this he was put on colloidal calcium in addition to the other treatment and his luminal was reduced one half. During the past month he has had no attack whatever. This means little perhaps. My object in presenting this patient at this time is to show a case on the way so to speak. I shall probably ask for permission to present him again later on.

I shall gradually eliminate the luminal, continue the calcium and *x*-ray, and the colonic irrigations, say twice a month.

Schellberg's report on his present condition is as follows:

Stomach well up under the ribs.

Greater curvature of the stomach 2½ inches below the border of the ribs.

Duodenum large with fluid retardation.

Ileac waves below normal.

Cecum greatly reduced in size.

Coloptosis and fecal stasis markedly improved.

Epilepsy has appeared to me to be a condition in which there is a large receptor intake and an inadequate effector output except explosively, the explosion being the fit. To put it another way, the semipermeable membranes of cell structure, particularly in the nervous system, may block the passage of ions of one charge until potential difference is great enough to discharge through the insulating semipermeable membrane, tending to equallize the potential difference. This discharge might account for tonic spasms with loss of consciousness. As this neutralization proceeds through the nervous system rythmically we have the clonic spasms and finally as the normal balance of potential is established the patient lapses into somnolence. The presumed regulatory functions of the pituitary gland over rythmic action must be remembered.

The well known and remarkable role of calcium in maintaining the normal and functional relationships between cells clearly justifies its administration in these cases, particularly as it has been pointed out recently that the calcium content of the blood is low in epilepsy.

This may seem like visionary speculation but much of it is in line with the recent work of Lillie.

Discussion

In closing Dr. Stokes said that in treating deafness where patients showed no response after the third or fourth treatment he discontinued. He outlined the complete technic employed by him in treating deafness including diathermy, pneumovibration, inflation and ultraviolet light.

He referred to the recent paper by Hugo Frey and A. Kriser of Berlin who trace otosclerosis to endocrine dysfunction and use *x*-rays for their stabilizing effects on these glands with brilliant success.

In connection with the case of epilepsy he said he had merely presented the patient in order to outline the technic and to show a case "on the way" so to speak. He will present him again later on with a further report.

25 West 43rd Street.

Drug Eruptions

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New York

(Continued from May issue.)

Cinchona, Quinine and its Salts, Quinidine, Cinchonine, etc. Cinchophen (Phenyl-Quinoline-Carboxylic Acid, Atophan) Neocinchophen (Ethyl-Phenyl-Quinolin-Carboxylic Acid, Tolysin).

The alkaloid quinine was introduced in 1820 but very few reports of its abnormal effects are recorded before 1870. It is noted that quinine workers are subject to eczematous rashes, probably from inhalation and external irritation. The different forms of eruption from purely internal administraion are described as erythematous, erysipelatous, urticarial, erythema multiforme-like, hemorrhagic, pemphigoid and gangrenous.

Practically the same types of eruptions, but not so severe, occur from cinchophen. I had occasion to see the mother of a dermotological colleague, with an extensive eruption of the erythema multiforme type, that followed the taking of cinchophen. Other eruptions described are angioneurotic oedema, erysipelatous, scarlatiniform, urticarial, mixed rashes and herpes zoster. Goldenberg, (vide footnote No. 8) saw a patient with bullous eruptions in the groins, vagina, rectum, lips and mouth, that began with itching of the hands and feet, sneezing and running nose. Goldenberg also cites an erythematous and hemorrhagic affair on the hands of a patient with an herptic and bullous outbreak on the tip of the tongue and roof of mouth.

There has been no report of any eruptive phenomena from quinidin, since its recent revival for auricular fibrillation.

Digitalis and Derivatives

Eruptions from this drug are quite rare. Goldenberg, (vide foot-note No. 8) calls attention recently to morbilliform and scarlatiniform rashes that occur after this drug is used. Morrow, (vide foot-note No. 1) cites a case that he had observed which developed an extensive erythema followed by urticaria and oedema, and accompanied by a considerable constitutional disturbance. Desquamation then ensued with total alopecia of the scalp and shedding of all nails. Morrow also cites three other cases of a much milder type, from the literature.

Hydrargyrum (Mercury) and Salts

The eruptive disturbances that sometimes follow the ingestion of mercurial preparations are first described by Benjamin Bell in 1796. The lesions that occur from ingestion, injection, inhalation and irrigation show great similarity. Almquist[40] lately studied thirty-eight cases of mercury dermatoses and classified them as simple and complicated or infective. He finds that mercury salicylate is responsible for most of them, grey oil less and mercury salves the least. They rarely start as a universal eruption but begin on the extremities with redness, urticaria or edema. Sometimes hemorrhages, pigmentations, vesicles, bullae, pustules, and eczematous lesions develop and occasionally gangrene. An eruption of the fixed type is recently reported by Langer[41].

The simple mild lesion may pass away in a day, the grave ones lasting as in one of Almqvist's cases as long as four months and twenty-three days. Accompanying the severer eruptive disturbances there may be fever, stomatitis (gingivitis) angina, with or without gastric, colonic and nephritic symptoms.

Patients with constitutional symptoms ought to be observed carefully as a fatal termination may ensue. Almqvist believes that the sympathetic nerve and its ganglion, supplying one organ and not the whole body, is the seat of the mercury idiosyncrasy.

I have already mentioned under arsenic eruptions, that the intravenous injections of sodium hyposulphite has been advocated as a remedial measure in dermatoses from mercury and other metals.

I may add a word of warning here against using mercury or any other drug in a mineral oil suspension, for subcutaneous or intramuscular injections. The use of such a vehicle often caused through non-absorption, unsightly and permanent tumors that could easily be avoided by using a vegetable or animal oil.

Phenolphthalein

Phenolphthalein is a phenol compound and belongs to a class known as triphenyl methane dyes, to which also fuchsin, eosin and fluorescin belong. Introduced over two decades ago it gained immediate popular favor as a laxative as it was considered absolutely harmless. Although an occasional albuminuria and a hemorrhagic nephritis is mentioned, not a single manifestation of its abnormal action on the skin and mucous membranes is cited until 1918. The author[42] then reported from the service of Prof. Fordyce at the Vanderbilt Clinic, five cases of erythema multiforme associated with cutaneous pigmentation (melanin), and succeeded in proving in one case the phenolphthalein etiology. The other four cases had the same type of eruption, now known as the fixed type, but did not respond to the test dose, owing to temporary loss of susceptibility. This variation in susceptibility occasionally occurs in patients intolerant to medicinal agents, and is as yet not well understood.

A further contribution to phenolphthalein rashes by Wise and the author[43] appeared in 1922, and the following description of the lesions is given:—

"In susceptible persons the ingestion of phenolphthalein provokes a peculiar eruption of the skin. This eruption consists of a few widely scattered and numerous irregularly grouped polychromatic macular plaques, varying in diameter from that of a pin head to several inches, varying in color from pink to bright red, dusky violaceous and deep purple; it is relapsing in course, chronic in nature and usually results in a protracted pigmentation of the affected areas of skin. Slight scaling may accompany the evolution of the lesions; a peculiar mottling is sometimes seen in the central zone of the macules; vesiculation, erosion and superficial ulceration may occur, more especially on the mucous membrane of the mouth and on the skin of the

Fig. 2—Fixed Eruption From Phenolphthalein

genitals; a burning sensation sometimes precedes and accompanies the appearance of the patches; moderate to severe itching may be a symptom during their evolution. The eruption, clinically, is a persistent multiform erythema, which, instead of vanishing without leaving a trace, perisists more or less indefinitely and terminates in a yellowish-brown deposit of pigment in the affected sites. After the subsidence of the active lesions, relapses are apt to take place, following the ingestion of phenolphthalein. These relapses appear and reappear in the original sites of the primary eruption, but they may also occur elsewhere. Mild constitutional symptoms, such as headache, malaise, slight rise of temperature and pulse rate may accompany the relapses."

In the normally hyperpigmented areas of the skin, the eruption is most marked, most pigmented and the last to disappear.

The eruption may effect any part of the mucous membrane. It may affect the vagina, and judging from the dysenteric-like symptoms that occasionally occur, in all probability affects the mucous membrane of the gastro-intestinal tract.

Although there are at least seventy-two phenolphthalein preparations on the German market, the first report in the European literature of a skin eruption, appears in 1920, when Silberstein[44] reports two cases. Recently Schelenz[45] issues another warning against the indiscriminate use of this drug on account of its ill effects. In this country Ayres[46] of Los Angeles, reports some cases of the fixed type, Corson and Sidlick[47] of Philadelphia, report some cases of the urticarial type, Klauder[48] of the same city, a fixed type, and Rosenbloom[49] of Pittsburg, an herpetic type.

Judging from the number of case reports from the different parts of the United States, and from the cases for presentation at the meeting of the dermatological societies, one of the commonest drug eruption in this country seems to be that from phenolphthalein.

No exact differential diagnosis can be made of phenolphthalein eruptions of the mouth from other drug eruptions. When the fixed eruption appears on the skin, we may think of phenolphthalein first as it is most common, arsphenamine next, then the antipyrin and barbital group, and finally mercury. There is more of a color display from phenolphthalein, less edema, more mottling, and more of a persistence to it, than what occurs from the others drugs mentioned above. Although it rarely happens, a patient may be receiving one or more drugs of this group and may be intolerant to several of them. This must be kept in mind and can be determined by the administration of a test dose of each individual drug. It is too premature to give any other differential diagnostic points, as new types of lesions are still being encountered. Figure 2, shows a private patient that was literally covered with polychromatic plaques, the center of each individual lesion showing marked hyperkeratotic scales. The lips and hard palate were covered with erosive lesions. It was all due to phenolphthalein, as a test dose revealed. Wise has seen a combination of rashes from phenolphthalein and acid salicylic, and the author has seen at Fordham Hospital, through the courtesy of Dr. Ochs, a combination of phenolphthalein and bromid rashes.

Suppression of the drug and local antipruritic remedies gives immediate relief from symptoms, but the pigmentations stay on and are very annoying to the patients. In one instance, the stains on the chin were still present, but less marked, at the end of two and one-half years.

About the most valuable agent to use to remove these slate-brown stains, is the frequent applications of the ultra-violet quartz rays. McCafferty at a recent meeting of the Dermatological section of the New York Academy of Medicine, has seen rapid disappearance of these stains after colonic irrigations.

Fig. 2. Fixed Eruption from Phenolphthalein. Recurrent polychromatic macular plaques covered with hyperkeratotic scales in a girl, fourteen years of age. Patient also presented lesions on lips and hard palate. She had been taking a laxative containing phenolphthalein for three months. Duration of eruption three months. Oral administration of test dose was positive the next day. (Private patient).

Phenolsulphonephthalein used in functional kidney tests, has not been definitely shown to cause any eruptions. Goldenberg, (vide footnote No. 13) has seen a rash resembling lupus erythematosous on the face with blebs in the mouth, that he thought may be due to this agent.

Phenotetrachlorphthalein now used for determining the functional activity of the liver, is another agent worthy of observation as a possible cause of eruptive phenomena.

Oleum Terebinthinae (Turpentine), Terebene

The internal medicinal use of turpentine is known to cause erythematous, urticarial and scarlatiniform eruptions, which are accompanied and followed by irritation and itching.

Klingmuller[50] and others have recently advocated the intramuscular injection of a ten to twenty per cent. emulsion of a rectified oil of turpentine in sterile olive oil as a cure for furunculosis, sycosis vulgaris, epididymitis etc. No one as yet reported any tegumentary eruption except an occasional abscess at the site of the injection or a slight focal reaction at the site of the lesion for which the patient is being treated, also a mild constitutional disturbance.

Miscellaneous Remedies

It is necessary to mention a few of the older drugs and their newer organic derivatives. The known abnormal effects of the older drugs assume added importance on account of the possibility of the increased intensity of symptoms or shortening of the period of onset, due to the ever increasing popularity of these newer organic derivatives, mostly given by injections. Such remedies as belladonna (atropine), Cocain and other local anesthetics like procain, butyn, etc., calcium (afenil), camphor, caffein, carbonates of sodium, chaulmoogra oil and its esters, colchicum, copper derivatives, ether, ergot, gold (krysolgan), guaiocol, hexamethylenamin, ipecac (emetine), iron, morphine, phosphates, pilocarpine, quinine salts, salicylates, silicates, spartein, strophanthus, strychnin, sulphur, theobromine (fibrolysin), and some others not mentioned in this article are capable of producing eruptive phenomena as when administered by mouth or rectum.

The newer organic derivatives given by mouth, like benzyl benzoate and benzyl succinate; medicinal benzine known as benzol, and carbon tetrachloride as well as quinidin, have not been known from the reports of the literature to cause any abnormal effects on the skin. The same applies to colloidal substances like acacia, gelatin, glucose, etc., and colloidal combination of drugs. Such a possibility should be kept in mind.

Thallium acetate, a remedy used internally years ago as an antihydrotic in night sweats, was found occasionally to produce alopecia also. Buschke[51] and others proved in animals that this drug has a specific action on the endocrine system, as manifested by alopecia, stunted growth, and cataract, and probably due to a hypo-thyreosis which this drug causes. These experiments through drug action throw an interesting light on a very puzzling disorder like alopecia, as well as on the specific signs of certain endocrine dysfunctions.

Summary and Conclusions:

An outline of the general and special characteristics of all drug eruptions is given, with the histopathology, recent theories of causation, diagnosis, and general indications for treatment.

One of the new type of lesions is the fixed or persistent type, occurring as single or multiple polychromatic plaques on the skin, and is produced with slight differences in appearance from the Phenolphthaleins, Arsenicals, Antipyrins, Luminal group and the Mercurials. It is most common from phenolphthalein, and is often associated with mucous membrane lesions.

The same group of drugs just mentioned above, also acetanilid, aspirin, cinchophen and quinin, may cause vesciular, pemphigoid, or papulo-erosive lesions of the visible mucous membranes, with or without simultaneous involvement of the skin.

An exfoliative dermatitis is one of the abnormal effects of the acroflavines, arsenicals, bismuthates and the mercurials.

An eruption indistinguishable from erythema nodosum, is shown to follow the use of the antipyrins, bromides and iodides.

Argyria from silver arsphenamine is still disputable, although three cases are reported. They all lack sufficient detail.

Bismuth, the latest anti-syphilitic remedy, produces the same types of eruptions as the arsenicals and mercurials, with the possible exception of the fixed type. The bismuth line is its special characteristic just as the keratoses characterized arsenic, and may be just as permanent.

Special preventative and remedial measures are described against intoxication from these metals, including bromides and iodides.

Mixed rashes from a single or several drugs may appear at the same time and cause confusion. The administration of test doses of the individual drug will usually help prove the drug or drugs responsible. It must be remembered however that a negative test may be due to a temporary loss of susceptibility.

Attention is called to miscellaneous old remedies used by mouth and injection and known to cause intolerance, and their newer organic derivatives given mostly by injection, who are also considered as possible offenders.

In the case of one drug, thallium acetate, its abnormal action (alopecia), throws an interesting light on the relationship between specific endocrine disturbance (hypo-thyreosis) and selective drug action.

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(Concluded on page 143)

Infections Produced by Anaerobic Gram-Positive, Gas-Producing Bacteria from the Surgical Standpoint*

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Gram-positive, gas-forming anaerobes were the cause of the gravest infections seen during the late war. The number of cases developing or arriving at a base hospital depended largely on the extent to which cases could be properly debrided at the front, and also the interval elapsing between the receipt of the wound and treatment. Consequently, in time of great activity at the front, when all faculties were strained to the utmost, the proportion of cases of gas gangrene was very high.

Gas gangrene is a pathological condition produced by infection of wounds with certain organisms, of which the anaerobes are the essential factors. Its manifestations and bacterial etiology are varied.

In the classification of gas gangrene, that of the French authors, Weinberg and Seguin is followed:

1. Classic or emphysematous form. There is an extensive gangrene. The skin is usually a brownish tint and vesicles are present. It is produced by B. Perfungens, Vibrion Septique, B. Perfringens, and B. Oedematiens, either alone or, usually, in combination.

2. Toxic or edematous form. Edema is progressive and extensive. Gangrene is sometimes marked, sometimes slight, sometimes totally absent. The skin is pale and tissues distended. The superficial veins are distended. Crepitation is absent or slightly perceptible. There are no vesicles. The organisms, or their combinations are: B. Oedematiens, B. Perfungens; or B. Perfungens and B. Oedematiens; Vibrion Septique, and B. Fallux.

3. Mixed form. The edema and emphysema are both marked and the bacterial flora is very varied.

4. Putrid form. This resembles the other varieties but has an extremely bad odor, caused by added infection with putrefactive but by themselves non-pathogenic anaerobes. The most important of these is the B. Sporogenes.

Weinberg observed no case of gas gangrene produced by aerobes alone but they are important from their association with anaerobes. It has ben observed that combinations of certain aerobes and anaerobes or several anaerobes, produce conditions far more grave than when they occur singly or in other combinations.

The character of the wound is of importance in determining the development of gas gangrene. Organisms causing this condition do not develop in living tissue; therfore, any injury with extensive devitalization of tissue forms a suitable pabulum for their growth. This is especially true in cases of muscle tissue, because of its richness in sugars and proteins. The predisposing factors are found in (1), crushing or extensive laceration of muscle, as in the case of wounds caused by shell fragments; (2), injury to blood-vessels, resulting in impaired circulation and consequent devitalization of parts—the tourniquet was, for this reason, thought to be a factor in predisposing to the condition; (3), in cases in which hemorrhage into the tissues has occurred, thereby forming favorable culture conditions; (4), bone injuries were very prone to gas infections, because of deep location providing anaerobiosis and because of the extensive laceration of muscle tissue caused by the spicules of bone.

In regard to the distribution, one finds that the essential organisms are found normally in the intestinal tract of animals. As the heavily fertilized fields of France were the battlefields, it is very obvious why anaerobic infection, resulting in gas gangrene, was so frequent.

The organisms isolated in cases of gas gangrene are very numerous. Suffice it to say that about twenty-four anaerobes have been recognized by various bacteriologists. Weinberg named six anaerobes as most important, and with which he has experimentally produced gas gangrene. These are: B. Perfringens (Amer. B. Welch), B. Oedematiens, Vibrion Septique, B. Sporogenes, B. Fallux, and B. Aerofoetidus. Among the aerobes most frequently found are: (1) cocci; (2) gram negative organisma; (3) the gram positive organisms.

The action on the living body, produced by these organisms is caused by the toxin which they secrete. B. Perfringens, Vibrion Septique, and B. Oedematiens produce very virulent toxins.

The role of these organisms in operations for appendicitis as in other conditions is tragic. Fortunately I have seen but one case and that during the war in France. An officer was operated upon for appendicitis. The organ was excised unruptured and the wound closed without drainage. It was a case in which one might expect an uneventful recovery. At the completion of the operation the appendix was split and found to be distended with pus. The immediate post-operative reaction the same night was 103° F. Chest examinations were repeatedly negative. The patient looked sick. This persisted until the second day when the wound was examined and the right iliac region in the vicinity of the McBurney incision was found to be markedly red, swollen, and edematous. The sutures were removed at once and the wound opened widely. A small amount of thin, yellow, clear fluid and some gas bubbles were expressed from beneath the aponeurosis of the external oblique. The wound was drained with tubes placed between the fascial planes. The next day the temperature dropt. Anti-gas serum was administered and on the fourth evening the temperature dropped below normal. The condition of the abdominal wound remained in statu quo. Bubbles and a thin serous discharge continued.

The following day the patient died. Cultures were taken and the infection was found to be due to the B. Edematiens. The edema was very extensive. It extended to the lower ribs above, down over the right groin and to the midline of the abdomen. Section of the muscles at autopsy was attended with characteristic gritting. The infection had spread for the most part between the oblique muscles but beneath the skin as well as to a less extent. The peritonitis showed itself for the most in adherent loops

* Amplified discussion of "Gram-Positive Anaerobes in Appendicitis," read before the Medical Society State of New York, by John E. Jennings, M.D., Rochester, N. Y., April 15, 1924.

of gut, injection of the intestinal visceral peritoneum and in a small amount of serous fluid.

The small number of gas gangrene cases in Base Hospital 61, A. E. F. was due to excellent debridement at the front. Debridement can well be called prophylaxis and in this, the most treacherous of all wounds, has surely saved many lives. In this hospital 32 cases were identified, and all of this number were placed on the critical list upon arrival. The mortality was 50%. The saving of 50% may be attributed to the taking of wounds cultures upon admission, the constant watch that was kept of all cases where gas-forming organisms were found, or suspected, the use of serums and the untiring efforts on the part of the surgeons to keep all wounds clean and freely drained. There were 16 autopsies performed on cases of gas gangrene representing the total number of deaths from this condition in a total of 42 deaths in the surgical service following gunshot wounds. Of the cases dying of gas gangrene, 5 had been amputated and 9 had been badly debrided. Sixteen cases showed emphysema, some very extensive, others to a less extent, but it was always the predominating factor. Necrosis was always extensive.

Diagnosis

Early diagnosis was the keystone of successful treatment; therefore, all patients were taken to the operating pavillion when they arrived at the hospital, for critical inspection and culture of wounds. The bacteriologic report was obtained in twenty-four hours. The exact identification of the anaerobes could be left until later, for thus as far as surgical treatment was concerned, was quite immaterial. With a knowledge of the character of the wound and the type of bacteria in it, cases requiring radical surgical measures could be selected. When patients showed the extreme characteristic lesions, the chances of successful surgical interference or other treatment were always doubtful. When the process was once well implanted, a fatal termination was almost the rule.

Treatment

Early radical surgical intervention is the only treatment. Both the Leclainche and Vallee and Weinberg serums should be used. The former is a polyvalent serum prepared against B. Perfringens, Vibrion Septique and the pyogenic organisms. A monovalent serum, prepared against the B. Oedematiens is used in conjunction with this. The Weinberg serum was prepared during the war at the Pasteur Institute, and is a monovalent serum. Sera against B. Perfringens, B. Oedematiens and Vibrion Septique are available. The procedure for serum treatment is as follows: In suspicious cases, when first seen, 20 c. c. of anti-Welch, 10 c. c. of anti-Vibrion Septique, and 10 c. c. of anti-Oedematiens is injected. If the case is in bad condition, use a double dosage before and after operation. When the organism is identified, only the anti-serum specific for the infection is used. In the polyvalent serum of Leclainche and Valle, 30 c. c. is the average dose. When possible, this serum is injected around the wound in the form of a barrage, to check the advance of the infection.

Results

Twenty cases were treated with serum, in addition to the surgical treatment. Five cases terminated fatally. Fifteen showed no signs of gaseous infection later. Of the five that died, two succumbed to streptococcus septicemia, and one to endocarditis and meningitis. None of these at necropsy showed any signs of gas gangrene at the site of the original wound. In fact, they presented healthy granulating wounds. Therefore, of the 20 cases treated with serum, it is justifiable to state that only 2 died of gas gangrene.

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The Precipitin Test for Syphilis; a Theoretical Basis for Its Mechanism; Analysis of 770 Parallel Tests

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Review of the rapidly growing literature concerning the precipitin test for syphilis leads one to consider the precedent factors which initiated the present study of this interesting phenomenon. The principle and most obvious reason for seeking and developing such a test is to obviate the numerous technical difficulties experienced in the execution of the Wassermann reaction. Another is the development of a test which will give accurate results with less expenditure of time and without involving many materials whose composition is a matter of great concern. Again, a factor little considered by the original investigators but pertinent to the attention of the medical profession is the availability of an accurate, rapid test, not involved, easily interpreted.

The first work on precipitation methods in the diagnosis of syphilis which attracted any attention was that of Meinicke in 1917. Meinicke (1) reported results with his method which were as good as with skillfully done Wassermann tests. The earlier reports on precipitation methods were of doubtful value and gave inconclusive results. Sachs and Georgi, (2) in the year following Meinicke's report, offered a relatively simple method, employing the patient's serum, saline, and antigen. The long incubation periods of 16-20 hours each, leading to bacterial clouding, were factors impending acceptance of this test (3). Following the Sachs-Georgi contribution, came a series of papers (4) with various modifications of the precipitin test.

The paper which gave the study of diagnostic precipitin tests for syphilis new impetus, however, was that by Kahn, in 1922 (5). Using a cholesterinized and a non-cholesterinized antigen made from dried beef heart, according to Kolmer, (6) and undiluted, inactivated serum, he obtained definite and prompt reactions which parallel Wassermann results. From this time on, more than a score of papers (7) have offered results indicating a significant parallel-

ism between properly done, properly interpreted precipitin tests and Wassermann results.

The very fact of the interest and research stimulated by this phenomenon is justification for its existence. It need not be so much an attempt to supplant the Wassermann test as an endeavor to obtain a simple index of whether or not syphilis exists and whether a confirmatory Wassermann test need be done. It may often be the needed link in the chain of evidence leading to diagnosis. In any case, before its final acceptance or rejection, it must pass thru a probation period similar to that passed thru before the Wassermann test reached its present status. The results obtained from clinical application of the test, with acceptable interpretations, will in the end determine whether it will end as a non-specific curiosity or will rank with established diagnostic procedures. The specificity of the precipitin test will be largely fixed in terms of the Wassermann reaction. The latter is constantly acquiring more prestige and its specificity is being more broadly demonstrated. Since this is so, and since a positive Wassermann is usually the best and occasionally the only suggestion of syphilitic taint, it is only reasonable to measure the value of the precipitin reaction in terms of its coincidence with Wassermann results.

The test depends upon the interaction of an antigen-suspensoid and the syphilitic antibodies in the serum. The latter are supposed to be represented by the euglobulin fraction of the serum (8).

The importance of the antigen dilution is obvious when it is remembered that the peculiar and distinctive properties of colloidal solutions are due to the size of the dispersed particles. The serum globulin, which is partially insoluble in carbonic and acetic acid, is supposed to be electro-negative. It is the valence or the number of electrical charges on the ion that is of importance in the precipitation of colloids, and since the precipitating agent is always of opposite sign to that of the colloid, one is forced to the conclusion that the reaction is an electro-chemical one, dependent upon alteration of the euglobulin portion of the serum. As the euglobulins of normal and syphilitic sera are identical in composition if determined by usual laboratory efforts, one must again conclude that if the euglobulin is the dominant factor as concerns the syphilitic antibody, then when it bears the latter, its charge and valence is varied. The reason for non-precipitation in non-syphilitic sera may be the fact that there is present an ion of the same sign as that of the colloid, and there is exerted a dissolving action, making the colloidal solution more stable (9). That some of the precipitating ion goes down with the colloid may be demonstrated by attempting reprecipitation from a serum which gave a heavy specific precipitate.

The above considerations lead to the theory that the precipitin reaction is an electro-chemical one, leading to precipitation of colloid-antigen; that the syphilitic antibody-bearer, the euglobulin fraction of the serum, is altered in syphilitic sera; that in normal sera the electrical charge of the euglobulin fraction is such as to inhibit precipitation; that in euglobulin altered by the syphilitic antibody, the electrical charge is such as to induce precipitation.

Results of Parallel Tests

In the results recorded below, the technic described by Kahn (5) was carried out. Parallel Wassermann tests were done in every instance. In reading the precipitation results, an attempt was made in each instance to record the precipitate as one, two, three, and four plus according to the classification given by Kahn and Keim and Wile. Thus, a precipitate of one large clump was recorded as 4 plus; a large flocculent precipitate as 3 plus; moderate sized flocculi as 2 plus; and small flocculi and granules as 1 plus. Obviously, such a classification allows of a considerable personal factor in interpreting results, and considerable experience with the test is necessary before the degree of precipitation can be estimated with accuracy. Even then, the difference between a 3 plus and a 4 plus precipitate may be largely a matter of opinion. It is with these limitations in mind that the results given below are offered in terms which appear to denote sharp delimitation. The non-cholesterinized antigen so frequently failed to give any precipitate that it has been disregarded in the figures offered.

In a large percentage of the positive results recorded, the precipitates were marked only after overnight incubation. It was found that by shaking well for three minutes, very few sera showed spontaneous agglutination, and when read after one to three hours of incubation, many positive sera failed to show precipitation, while the same sera would show strong agglutination after overnight incubation. The results given, then, represent in every case readings made after overnight incubation, using cholesterinized antigen as described by Kahn (5) and Keim and Wile (7).

Seven hundred and seventy sera were used, and parallel tests done after the method of Kahn and with a standard Wassermann technique. The patients whose sera was used were from medical wards and from obsterrical and venereal clinics, largely. A considerable number were under treatment. Table 1 shows that there was absolute agreement in 729 of the sera tested, or in 94.6%.

The second table records the sera giving results which did not absolutely agree. In all, there were 41 of these, or 5.4%. It will be seen, however, that in only 6 of these were the results confusing. One precipitin test gave a 3 plus reaction, while the Wassermann was doubtful. This occurred in a case under intensive treatment. The same was true of a patient with a doubtful Wassermann, who gave a 2 plus precipitate. One serum giving a doubtful Wassermann reaction and a negative precipitin test was negative to both at a later examination. Two sera gave 4 plus reactions by the Wassermann test and negative precipitin tests. A later precipitin test was positive in one case. All of the other sera listed in Table 11 gave results which varied in degree only, both precipitin and Wassermann tests being definitely positive.

Thus, it is seen that of 770 sera, only three gave negative precipitin reactions where the Wassermann was positive, or in other words, 1.8% of all the positive sera, or 0.4% of the entire series showed a severe discrepancy between the results!

Conclusions

1. The precipitin test depends upon the interaction of an antigen-suspensoid and the syphilitic antibody found in euglobulin.
2. The reaction seems to be an electro-chemical one, involving the formulations governing precipitation of colloids.
3. Proper interpretation of the results is possible

only after becoming acquainted with the possible vagaries of the test.

4. The test is still for the serologist, not the general practitioner.

5. Overnight incubation and the use of cholesterinized antigen is essential for good results, if the original method of Kahn is employed.

6. Properly done, properly interpreted, the precipitin test for syphilis is remarkably accurate and valuable. It concurs with clinical data and the Wassermann test.

7. In the reported series of 770 parallel tests, it was in agreement in about 99% of the cases.

In conclusion, I wish to express my thanks to Dr. Louis Nerb, Bacteriologist at the Brooklyn Hospital, for his kind assistance in performing a majority of the Wassermann tests, and for his interest and cooperation in recording the above results.

TABLE I

PRECIPITIN AND WASSERMANN TESTS GIVING IDENTICAL RESULTS

Degree of Reaction	Precipitin Test Number of Sera	Wassermann Test Number of Sera
4 plus	102	102
3 plus	12	12
2 plus	5	5
1 plus	7	7
Negative	603	603

TABLE II

POSITIVE SERA GIVING VARYING RESULTS

Number of Serums	Precipitin Test	Wassermann Test
4	4 plus	3 plus
2	4 "	2 "
10	3 "	4 "
3	3 "	2 "
1	3 "	Doubtful
3	2 "	4 plus
4	2 "	3 "
6	2 "	1 "
1	2 "	Doubtful
3	1 "	2 plus
1	1 "	Doubtful
2	Negative	4 plus
1	Negative	Doubtful

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Diagnosis and Treatment

An Antidote for Arsenic, Bismuth and Mercury Poisoning

Henry C. Semon of the Royal Northern Hospital, London, and dermatologist to the Ministry of Pensions, (*Brit. Med. Jour.*, No. 3302, April 12, 1924, page 662) calls attention to the efficiency of the intravenous injections of sterile solutions of sodium thiosulphate in combating the toxic effects of arsenic, bismuth and mercury.

He observes that the preliminary report by Ravaut (*La Presse Medicale*, Jan., 1920) and the more detailed account by Drs. McBride & Dennie (*Arch. Derm. & Syph.*, Jan., 1923) have indicated to him that these claims are justified and they warrant the use of the drug on a more extensive scale. Their conclusions are that the course of dermatitis is shortened from months to weeks, that intravenous injections of the salt are preferable to all other methods of administration and are non-toxic up to a degree of 2 grams, and that acute and chronic mercurial poisoning is rapidly controlled.

While Semon does not lay claim to an extensive experience he states that he feels "we have a specific, safe and rapid antidote for stomatitis due to mercury and bismuth in sodium thiosulphate. It also offers a hope that the course of arsenic poisoning both in the skin and liver can be controlled and in some degree shortened by its administration."

He records two cases of bismuth stomatitis and two of mercurial stomatitis which cleared up very quickly under sodium thiosulphate treatment.

In a case of arsenical jaundice following 6 intravenous injections of novarseno "Billon" of from 0.45 to 0.75 gram each, 0.75 gram sodium thiosulphate in 10 cc. of water was given intravenously immediately the jaundice was noticed. An examination indicated severe hepatic inadequacy. Semon gave daily intravenous injections of from 0.45 to 0.5 gram for nine days, giving a total of 4.7 grams altogether. No symptoms of intolerance supervened. The subjective symptoms of icterus improved, while the icteric tint faded visibly from day to day. 13 days after, the patient was discharged free from all symptoms.

He feels that as the action of sodium thiosulphate is to neutralize the arsenic good results can only be confidently expected if treatment is commenced immediately the toxic symptoms are apparent. If actual tissue destruction has already occurred and so-called yellow atrophy of the liver is in progress a favorable issue is hardly to be expected.

He notes a case of acute dermatitis after two sulpharsenol injections, in which after 0.5 gram sodium thiosulphate was given immediately, the pruritus disappeared the next morning. There was a slight desquamative reaction 48 hours later, but the patient was quite well in 5 days after two injections of sodium thiosulphate.

He quotes McBride and Dennie who saw a woman who swallowed 7½ grains of bichlorid of mercury with suicidal intent. Four hours later in the hospital she showed acute abdominal symptoms and hematuria. Thiosulphate by mouth and 0.45 gram intravenously checked the pain and diarrhea. 8 hours later she was given 0.9 gram intravenously and the following morning 0.45 gram. The patient made a complete recovery in a week and, although 8 months pregnant, she did not abort.

Semon also quotes a case of mercurial stomatitis and eruption following the intravenous injection of ⅛ grain of bichlorid of mercury for severe septicemia. The mercurial poisoning did not appear for a fortnight after the injection, but the stomatitis commenced to clear at once and there was a slight desquamation on the fourth day. Treatment was abandoned due, the author thinks, to too much thiosulphate by mouth.

He notes an interesting method of utilizing thiosulphate which is new. The patient received 0.6 gram novarseno "Billon" in 10 cc. of water given by an assistant. The needle slipped through the posterior wall of the vein and a large swelling occurred. The patient fainted. The needle was left in situ and 8 cc. of distilled water containing 0.75 gram of sodium thiosulphate was injected through the needle. A week later there was no trace of infiltration and no pain on deep pressure.

The author, in concluding, feels that his results confirm those of the American authors and support their view that sodium thiosulphate given intravenously is a potent antidote for mercurial and bismuth stomatitis and of real value in counteracting the serious effects of acute arsenic toxemia. It may be found to be an indispensable adjunct in treatment of all cases of acute metallic poisoning.

Health Conditions Improving in Austria

Dr. Mary Griscom, a well known Philadelphia physician, who has spent nine months in relief work for the American Friends Service Committee in Austria, has returned to America.

Dr Griscom had charge of the anti-tuberculosis work for the Service Committee in accordance with a program supported by that organization and the Austrian Department of Health in a fight against the menacing plague which threatened the lives of tens of thousands of their children.

With the health of her child population sapped by years of undernourishment during the war, Austria was unable to check the invasion of tuberculosis. Very young children are infected with the disease and the government has not been able to provide treatment.

Dr. Griscom has been associated with Dr. von Pirquet, the famous child specialist in Vienna. Teachers are trained in anti-tuberculosis and child care methods in Dr. von Pirquet's clinic, then are sent out into the remote districts of the provinces to give instruction in the homes and schools.

The Austrian government is fast regaining her ability to cope with her gigantic health problems, says Dr. Griscom. The Friends Service has been able to save the lives and health of hundreds of children by making it possible for them to have medical attention and suitable food.

Survey of the Narcotic Problem

Carleton Simon, M.D., Special Deputy Police Commissioner, in charge Narcotic Division of the New York City Police Department presented this paper before the Medical Society of the County of New York, January 28, 1924, at the New York Academy of Medicine. The results he gave are very striking and worthy of serious consideration.

In June, 1923, questionnaires were sent out to all the physicians and dentists in the State of New York. The one to the physicians asked:

"Amount of Morphin prescribed in 1922.

Amount of Heroin prescribed in 1922.

Amount of Cocain prescribed in 1922.

Number of narcotic addicts treated in 1922.

Do you believe Cocain can be advantageously replaced by non-habit-forming synthetic drugs, such as Novocain or similar preparations?

Do you believe Heroin is necessary in your practice?"

The one to the dentists contained the following inquiries:—

"Amount of Cocain used in 1922.

Do you believe Cocain can be advantageously replaced by non-habit-forming synthetic drugs, such as Novocain or similar preparations?"

The animating purposes in making these inquiries of physicians and dentists, as to the practical experience acquired in their professional use of habit-forming drugs, were as follows:

To determine drug addiction is a medical or a police problem.

To determine the number of medical addicts treated during the year 1922.

To determine the quantity of narcotics prescribed by physicians and dentists of the States of New York in 1922.

To obtain information as to the desirability of substituting non-habit-forming drugs.

To secure information relative to the necessity of heroin in the practice of medicine, and, if unnecessary, why the physicians should not align themselves to make heroin an outlawed drug.

To ascertain the quantity of cocain used by the dentists and physicians and the desirability of substituting non-habit-forming synthetical drugs.

Our census of the physicians of this State shows that the percentage of medical addicts is almost negligible.

Number of physicians questioned	14 715
Number of replies received	7,559
Percentage of replies	51.37%
Number of addicts treated during 1922 (as reported by 7,559 physicians	775

Further analysis of the answers received to our questionnaire showed:

389 Physicians treated a total of 775 addicts.

94.8% *or* 7,170 *physicians did not treat any addicts.*

As an instance to even more definitely show the criminality associated with drug addiction and the extent to which it has grown in the ranks of the criminal, we have selected from the arrest statistics of the Narcotic Division of the Police Department of the City of New York for 1923, a group of 741 individuals whose records showed more than five previous convictions and who were arrested for various crimes throughout their *criminal career* 5,056 *times.*

We have carefully checked up our statistics of arrests and commitments to hospitals of narcotic users for the years 1921, 1922 and 1923, totalling 9,637 in number and found they represented 8,174 individual narcotic users. We then checked up the criminal records of these 8,174 individuals, and so far as shown by records on file in the International Identification Bureau of Narcotic Criminals, of the New York Police Department, representing 700 cities and 27 nations, *these* 8,174 *individuals had been previously arrested* 32,696 *times* in all sections of the country for every crime on the calendar.

The 8,174 narcotic users were tabulated viz.:—

876 Opium Smokers (Mostly Chinese)

27 Hasheesh Users (Marahuanna Smokers)

379 Use Morphin *Only*

6,892 Use Heroin; separately or combined with Cocain.

It will be noted that eliminating the smokers of opium and hasheesh, 95% of the narcotic addicts use heroin. Only two per cent owe their addiction to medical reasons.

As to the quantity of narcotics used and prescribed by physicians and dentists in the State of New York as an index to the legitimate demand per capita, replies to our questionnaires give the following:

Amount of Morphine and Heroin prescribed in 1922 by 7,559 or 51.37% of the Physicians of this State.

Morphine, 1392 ounces or 43,291 grams

Heroin, 30 ounces or 933 grams

Placing the customers of the illicit narcotic street vendors in New York City at a minimum of 10,000, based upon arrest statistics, 95% of them addicted to heroin using at the average of 10 grains per day, we have 100,000 grains daily or 36,500,000 grains or 76,041 *ounces* as the yearly quantity of heroin used by the criminal drug addict in New York City alone, against 58.38 *ounces* computed as being legitimately prescribed by the entire medical profession of the state during the same period of time. *This shows why heroin should be outlawed.*

From these replies we also arrive at the conclusion that at this ratio the number of medical addicts in the entire State of New York is far below those previously estimated and only 1,509 as against the thousands arrested by us in the City of New York and thus proves that the narcotic problem is a police and not a medical issue.

To the question: "Do you believe cocain can be advantageously replaced by non-habit-forming drugs, such as novocain or similar preparation?" the replies were:

	Yes	No	Occasional	Unanswered
Physicians	5,158	1,280	534	587
Dentists	3,770	253	277	35

Another question which was asked of physicians and dentists was:

"Amount of cocain used in 1922?"

The cards returned by 7,559 or 51.37% of the physicians and 4,335 or 60.89% of the dentists showed the following:

Physicians	610 ounces or 18,971 grams
Dentists	1,716 ounces or 53,368 grams

Approximately 83% of physicians deemed that cocain could be dispensed with in favor of non-habit-forming substitutes and only 17% considered cocain indispensable.

Approximately only 6% of the dentists believed cocain indispensable. Ninety-four per cent believed the use of non-habit-forming substitutes such as novocain.

SUMMARY

Figures received from 7,559 physicians or 51.37% of the total physicians in State of New York (14,715)

and

Figures received from 4,335 dentists or 60.89% of the total dentists in the State of New York (7,119)

Morphin prescribed in 1922 (physicians)	1392 oz. (43,296 grs.)
Heroin prescribed in 1922 (physicians)	30 oz. (933 grs.)
Cocain prescribed in 1922 (physicians)	610 oz. (18,971 grs.)
Cocain used in 1922 (dentists)	1716 oz. (53,368 grs.)
Number of narcotic addicts treated in 1922	775 individuals

Do you believe Heroin necessary in your practice? (physicians)

Yes	No	Occasional	Unanswered
1,201	5,711	404	239

Do you believe Cocain can be advantageously replaced by non-habit-forming synthetic drugs, such as Novocain or similar preparations?

	Yes	No	Occasional	Unanswered
Physicians	5,158	1,280	534	578
Dentists	3,770	253	277	35

Above figures applied pro rata for all physicians (14,715 and dentists (7,119) of New York State (Pop. 10,384,144)

Morphin prescribed in 1922 (physicians)	2709 oz. (84,272 grs.)
Heroin prescribed in 1922 (physicians)	58 oz. (1,816 grs.)
Cocain prescribed in 1922 (physicians)	1187 oz. (36,931 grs.)
Cocain used in 1922 (dentists)	2818 oz. (87,639 grs.)
Number of narcotic addicts treated in 1922 by the entire medical profession of N. Y. State	1,509 individuals

The Medical Times

A MONTHLY JOURNAL
OF
Medicine, Surgery and the Collateral Science
ESTABLISHED IN 1872

EDITED BY
H. SHERIDAN BAKETEL, A.M., M.D., F.A.C.P.
ARTHUR C. JACOBSON, M.D.
Associate Editor.

Contributions.—EXCLUSIVE PUBLICATION: Articles are accepted for publication on condition that they are contributed solely to this publication.

When authors furnish drawings or photographs, the publishers will have half tones and line cuts made without expense to the writers.

SUBSCRIPTION RATES
(STRICTLY IN ADVANCE)

UNITED STATES (Including Alaska, Cuba, Mexico, Porto Rico, Hawaiian and Philippine Islands)	$2.00 per year
CANADA	$2.25 per year
FOREIGN COUNTRIES IN POSTAL UNION	$2.50 per year

SINGLE COPIES, 25 CENTS

Definite written orders for THE MEDICAL TIMES are required from all subscribers, to whom the journal is thereafter regularly forwarded.

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All communications should be addressed to and all checks made payable to the publishers.

MEDICAL TIMES CO.
ROMAINE PIERSON, *President*
H. SHERIDAN BAKETEL, *Treasurer*
GEORGE B. CREVELING, *Secretary*

95 Nassau Street - - - New York

NEW YORK, JUNE, 1924

Mammon versus Æsculapius

Since the Volstead Act has dealt a violent blow to the physician's notion that only he was qualified and enabled to employ alcohol therapeutically, he has been compelled to interest himself in the genesis of the thing that has knocked his ideas into a cocked hat.

By what process of culture, through what phase of civilization, has Prohibition itself evolved? What, philosophically, are the roots of the doctrine?

Prohibition derives from Puritanism, which in turn derived from the Thou-Shalt-Not morality and ethics of the ancient Hebrews. In both cases there is an economic foundation; that is to say, be good and you will be prosperous; anything that interferes with prosperity, like drinking, is not good. The Puritan of Colonial days used alcohol rather freely, for this had not then come under his ban and there was much scriptural warrant for the use of it, but more important still, our modern industrial system had not been inaugurated. When the factory system came in it was more and more realized that top-notch production and alcoholism were not compatible; in other words, alcoholism directly interfered with profits. Alcohol was tolerated in so far as a lessened production of goods was desired, in order to keep wages depressed, but with the expansion of foreign trade and an insistent demand for intensive production and large profits, Prohibition became inevitable.

Our enemy, therefore, is Mammon. This is the god who has evicted Æsculapius. The profession will divide on this question according to the cultural ancestry of its members.

Nominations are in Order

An advertisement recently appeared in the Roanoke *Times* which read as follows: "William Drewry, M. D., for thirty-seven years in the service of the State caring for the insane, has accepted an appointment as city manager of Petersburg."

Of course, the editor permitted this statement of a simple fact without necessarily being unconscious of a humorous connotation; he may have even left the statement in the form cited because he intended the facetious to smile.

But whether or not the editor is a dumbbell he gave to the world a suggestion of large moment.

What training for civic functions could there possibly be better than that of the State Hospital physician, in so far as the management of "difficult" people, on a large scale, is concerned?

Half of our governmental troubles are due to the fact that affairs are not in the hands of technicians, and it is technicians of the type of the city manager of Petersburg who are the most needed.

This Petersburg experiment ought to be closely watched. We are prepossessed in its favor and sure of its success.

A Professional Inconsistency

When physicians get together in large numbers they never seem to be the least bit concerned about personal hygiene. They sit and swelter and perhaps smoke for hours in atmospheres calculated to infect and deplete physical supermen. This is just as true of the hall in which the most important meetings in the metropolitan district are held as it is of the small town quarters. This particular hall is a veritable box, practically sealed against outside air, and in it persons sensitive to the effects of atmospheric pollution actually suffer on occasions when the brethren are present in large numbers.

It is a paradox when in such stifling places papers are read dealing with hygienic topics.

There can be no doubt that many men absent themselves from such gatherings just because of the disgusting and sickening conditions aforesaid.

Some enterprising newspaper ought to run a feature story about the strange behavior of the guardians of community and personal health, make us thoroughly ridiculous, and force us to assume the defensive.

If there is good faith behind our teachings we ought, at least, to ventilate our meeting places. How sincere can be our interest in the filthy subway problem when we would just as soon, apparently, hold our meetings in a sewer as in a sanitary place?

Racial Crossings

How crossing human breeds may result in an improved strain is interestingly explained by Professor Spaeth, of Princeton University. A thoroughbred, he says, is one who can be expected to behave in particular ways in certain circumstances, according to influences transmitted by thousands of ancestors. The mixing of good but dissimilar breeds compels the progeny, when confronted by a situation in which the two lines of ancestors would have proceeded differently, to think, and thinking gives birth to new ideas.

A certain type of dog, given a certain situation, will meet it by biting; another type will run away from the same situation. If these two types be mated, the resulting mongrel will be of higher intelligence

because he will be frequently compelled to formulate new policies.

Too much mixing, or the mixing of poor breeds, will not give good results, and this, no doubt, explains much of our crime and insanity. The criminal is one who cannot formulate a rational policy of adjustment. The insane individual is one who suffers from new ideas that are a bit too "jazzy" for practical human purposes.

Of course, these are generalizations, but there is an element of truth in them which should receive the serious consideration of the partisans of the American melting pot.

The scientific method of approach, here as elsewhere, is needed in the presence of such problems. Statistical studies would throw much light upon the mixing of breeds in relation to the genesis of insanity and crime, and in relation to the shortcomings of so many of our public men of the present era.

Of paramount importance, however, is a better understanding of eugenic mating from the standpoint of racial intermixture.

Periodic Medical Examinations

We are inclined to question the smug and dogmatic assertions, in our *State Journal* (April 18, 1924), to the effect that physicians generally are not qualified to diagnose incipient defects and diseases, or to estimate the degree of curability of the conditions. As far as we can see, they are simply less cockshure about these matters than the pretentious persons who glibly pass upon anything, but who in the course of time are frequently confounded by the clinical developments (or by the lack of developments).

It is being said that physicians are not prepared to make the annual physical examinations now being urged by many lay organizations, and that they must be instructed how to make them. It is alleged that experience in the Army showed that only a few doctors were qualified to interpret the results of the physical examinations which they made. There is said to be a lack of uniformity in the interpretation of the results of an examination.

In that last criticism, it seems to us, lies the crux of the grievance against the rank and file of the profession with respect to this matter of examinations. However skilled and experienced we may be we shall not be forgiven if we remain unstandardized. That is the real trouble; we must follow some academician's charts and rules of thumb; individualization and perspective are anathema.

We note that such professional critics as we have quoted are generally administrative officials of some sort rather than clinicians. Even in their academic capacity they fall down woefully and write about "remedial" instead of remediable defects.

The general practitioner who has carried a patient through a severe infection like pneumonia knows vastly more about such an individual's potentialities than any pre-clinical examiner could possibly divine. Of course, such a practitioner would not see a deflected septum in such an individual in the same perspective as an Uplifter.

Let us try to preserve some sanity and reason in the midst of this new crusade, and let us remember that any movement that finds it necessary to traduce a great wing of the profession in order to serve its ends must possess questionable credentials.

Miscellany

Conducted by Arthur C. Jacobson, M.D.

Ford Puts Hospital on Standard Commercial Basis

By Neal O'Hara

Henry Ford has embarked on new detour. Vibration czar has unfurled a new hospital in Detroit. It is highly upholstered infirmary with four doors, bearing Hank's trademark on the facade. Standardized service and no rebates. Your vermiform appendix gets same treatment whether you are one of Hank's easy payment customers or paddle about in a Rolls-Royce.

That Ford hospital is one-price surgical bazaar from sub-cellar to gargoyles. You are set back same money for a carbuncle, whether you have seat on garbage wagon or the stock exchange. If you want charity treatment, stay at home. That's where charity begins.

Temperature charts and Dun and Bradstreet reports compiled daily. Everything done on large scale basis. Large scales for weighing babies. Large scales expected from measles convalescents.

All standardized parts in artificial limb department. Price tag on each and every article. Look for the signature.

Operating expense has been slashed to a minimum. Ether cones are our only overhead expense.

Best surgical service in the Middle West. Six hours in dreamland to a gallon of gas.

Bodies washed by day or night nurse. Alcohol, $2.50. Water, $2. Universal joints cured in rheumatic ward. Eliminate that squeak!

Spare tire on all invalid chairs. All crutches equipped with nobby-tread ends.

The hospital that does things right. Special accident door for fliv owners who are badly shaken up.

Free copies of Dearborn Independent left at sickroom door each day. Synthetic motor rides for convalescing Ford owners. We give you a vibration massage in same wave length as your own car.

Each surgeon carries standard equipment tool chest. All surgical patients are primed with ether.

Ask for demonstration in our new hospital cot. Four castors, no brakes. Easy riding and snappy pick-up. Equipped with resilient rubber upholstering, nurse's bell and reading lamp.

Ford ambulance will call for you right at your door. Immediate delivery to receiving ward guaranteed.

We can operate on you cheaper because of the smaller wheel base of our operating tables.

Drinking water direct from our own Ford springs.

Special shock absorbers for apoplexy victims. We treat our eczema patients with special baked-in process so they won't scratch.

Skin grafting, $1.50 for three-inch patches. In larger sizes, 30x3½ inches, $11.75, attached.

We specialize in blood transfusions—light, medium, heavy-medium and heavy blood. Pumped in free.

Repair department. Lowest prices. Stitches, $2 per dozen. Absorbent cotton, 45 cents a gallon. Gauze bandages, 22¼ cents per mile.

Speedometer attached to racing fever. Heart valves ground while you wait.

Special offer for July and August. Double pneumonia for the price of one.

Free air to patients coming out of ether. Free water to hydrophobiacs.

Let us explain our easy payment system. Five dollars a week and the operation's yours.

Address all communications to the Ford Locomotor Ataxia Company.

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Attention Life Extension Institute!

In the April isssue of the *Long Island Medical Journal* we find the following review of "Health Building and Life Extension," by our good friend Dr. Eugene Lyman Fisk:

This book is the result of a survey of health conditions. It presents various problems relating to public health, industrial hygiene and individual hygiene, and endeavors to place these factors in their proper place and order. The volume will prove attractive to all who are interested in good health, either for themselves or for the community. The book contains thirty-one chapters; among the most important are Chapter IV, "Is Man Physically Deteriorating?" and those on "Poisons," "Physical Trauma (or Strain)," "Psychic Trauma (or Strain)," and "Apathy." An important feature is the list of bibliographical references, which cannot fail to be of value to all future writers along similar lines.

The numerous tables in the book contain valuable information; some of the comments which follow (or are based on) these tables are open to question. We find that the death rate from cancer has been increasing for several years; in 1900 it was 63 per 100,000 of the population, and in 1920 it was 83.4. On the following page we are told that "Cancer is one hundred per cent. curable if treated in its earlier stages." Tea and coffee are included under the caption "Poisons," along with opium, cocaine, tobacco, alcohol, and headache powders. Some of the remarks about the general practitioner are entertaining.

Thus, we find that a man who "had sought relief from general practitioners and from specialists" without any benefit, and who was then "kept under observation in a hospital for several weeks by a gastro-enterologist of international repute," who then fell into the hands of a "leading neurologist," and all without any good resulting—fortunately took the ordinary routine examination of the Life Extension Institute, when Lo! Presto! a correct diagnosis is promptly made, and after being operated on the patient made a quick recovery. And we are told: "Even a gross test of vision applied by a school teacher would have led to a final diagnosis in this case." Another case—a man "spent thousands of dollars," "passed through the hands of nine different specialists," "had various diagnoses made," and then decided as a last resort to have a Life Extension examination. "The system did the work." Again, a complete cure, "and probably the saving of the patient's reason."

One is prompted to ask "Why have doctors when there is the Life Extension Institute?" and then, as a natural sequence, "Why have even a Life Extension Institute when there are school teachers?"

R. J. E. Scott.

Old Fashioned Molasses

(Concluded from page 127)

dence in the principal use of molasses where hard muscular work is performed has been brought forward by Steinitzer[5]. He has personally found that in Alpine climbing his capacity for strenuous exercise was much greater after partaking liberally of molasses.

The United States Army recognizing the energy sustaining value of molasses as a food, make it a component part of the ration for soldiers. (Benedict[6]). The U. S. Navy also incorporates molasses as a component part of the daily ration for the enlisted personnel of the Navy. ("Fitch's Dietotherapy," Vol. 2 p-727).

Molasses as a Laxative

From the earliest memories of childhood I can recall that the negro mamies in the South gave molasses as a laxative, one teaspoon to the children and two tablespoonsful to adults.

Professor Thompson[7] of Cornell in his work on foods says, "both treacle and molasses are somewhat laxative, and the effect as an aperient of plain gingerbread made with a good quality of brown molasses is very satisfactory. For young children from 6 to 10 years of age molasses sometimes operates very well in keeping the bowels open. Plain molasses candy is a wholesome form in which to administer it to children." Dr. Walker says "good molasses candy is good food," (Thompson's Practical Dietetics).

Dr. Booker[8] writing on the treatment of constipation in children says "as the simplest of laxatives I strongly recommend a little molasses and water when the passages are very hard and dry, if the means already mentioned do not give relief local stimulation is adopted, among the latter, I prefer boiled molasses moulded into pencil shaped masses and introduced into the anal opening."

Dr. Anders[9] of Philadelphia says "suppositories made from molasses candy will effectively relieve a loaded bowel."

Prof. Thompson,[10] in discussing the treatment of chronic constipation says "molasses are laxative in action, and gingerbread especially when made from a good grade of brown molasses gives most satisfactory results with children."

Dr. Loomis,[11] former professor of the practice of medicine in the University Medical College, New York City says "prunes liberally sweetened with molasses act very satisfactorily as a laxative in the constipation of children."

Edmund Cautley, M.D., F.R.C.P.,[12] Senior Physician to the Belgrave Hospital for children, London, says "for the constipation in bottle fed children I recommend treacle (molasses) for its pleasing laxative properties."

Doctors Friedenwald and Ruhrah[13] of the University of Maryland, in their admirable text book Diet in health and disease, say "Molasses forms a highly nutritious food, and on account of the impurities contained has a more pronounced aperient effect than highly refined sirup."

Dr. W. J. Fenton[14] of Victoria Hospital for Children, London, in discussing the treatment of constipation in children says "golden syrup (molasses) or treacle are useful in relieving the constipation of older children."

A. Dingwell Fordyce, M.D., F.R.C.P., Ed.[15] Extra Physician to the Royal Hospital for sick children, Edinburgh, recommends cane sugar as a preeminently satisfactory laxative for constipation in children.

Reginald Miller, M.D., Lond., M.R.C.P.[16] Physician to the Paddington Green Hospital for children, London, in discussing the dietetic treatment of constipation in children urges the administration of brown (cane sugar) as a satisfactory, simple laxative.

Dr. Lula Hunt Peters.[17]—The laxative foods, are foods which are rich in cellulose. Molasses and malt sugar are especially recommended for children.

Conclusions

As a food.

(a) Molasses is a healthful, wholesome food.

(b) Molasses is a form of highly concentrated, easily digested carbohydrate food.

(c) Molasses is a highly nutritious food, rapidly increasing body weight and muscular development.

(d) Molasses when burned in the body yields a fuel value of 1290 calories per pound yielding immediate muscular energy.

(e) When molasses is a component of the dietary, the ability to perform strenuous work is greatly increased.

(f) Molasses, as a component of the dietary tends to lessen fatigue, and prevents nitrogenous waste.

As a laxative.

(g) Molasses exerts a pleasing laxative action on the alimentary canal and in proper dosage produces satisfactory evacuations.

(h) A pleasant method of administering molasses as a laxative to children is in gingerbread and molasses candy.

(i) Specialists in diseases of children and general practitioners in the South strongly recommend molasses as a simple laxative in the milder types of constipation in children.

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Cancer

(Concluded from page 123)

Florida, the highest among the southern states; and when one compares Michigan, Wisconsin, and Minnesota with the group of Gulf states the difference cannot be explained by age and sex excess, nor by any other process of adjustment. Is the difference due to climatic causes? Such an inference is natural and logical; but inferences are not evidence. Perhaps when the pathologist and the meteorologist join hands, evidence the one way or the other may be forthcoming; but it is not now at hand. The apparent high rate in the New England states, higher than that of other states of the northern group is probably due to advanced age and excess of female population. This explanation, however will not apply to Massachusetts, whose rate is not only the highest of the group, but the highest of the United States in 1920.

The difference between the rates of urban and rural communities is very marked. For the registration area in 1920 the urban rate was 100; in rural communities it was only 68. This disproportion has varied but slightly in ten years. Why? The problem certainly is worth investigation, but an answer is not at present to be found.

Statistics show that the negro is far less susceptible than the white man. In South Carolina the crude rate among white people was 41, among the negroes 25. In other southern states the disproportion was not so great, but with a single exception it was in favor of the negro. The exception was Richmond. There the rate among negroes was 88; among the white population it was 80. Why?—the answer is not known.

A comparison of the rates of contiguous areas is not without queries yet to be answered. The rate for Ohio in 1920 was 89; across the river, in Kentucky it was 56. In the three years ending 1920 the rate decreased in Kentucky; it increased in Ohio. In Maryland it was 94; in Virginia adjoining it was 56. In San Francisco, it was 151; in Oakland, a favorite residence locality across the bay, it was 100. In Akron, Ohio, the rate was 41; in Cleveland it was 83; in Bridgeport, Connecticut it was 93; in Hartford, fifty miles away, it was 141. In Detroit, Michigan, it was 63; in Grand Rapids it was 100. In New York City it was 94; in Albany, 144. In New Bedford, Massachusetts, it was 78; in Worcester, 121; and a score of other comparisons equally perplexing might be noted. To a certain extent advanced age and sex excess might lower the ratios, but no amount of smoothing will bring them to anything like uniformity. Most certainly such an explanation will not apply to Oakland and San Francisco; nor to Cleveland and Akron; nor to Ohio and Kentucky.

Heretofore the treatment of cancer has been chiefly of surgical character. At the present time not a little research is directed to bio-chemical treatment and to prevention. Conditions of nutrition are also a subject of investigation. One hears the question: Is cancer a result of defective nutrition?—or is it redundant nutrition?—or is it due to abortive nutrition, a condition in which a degeneration of functional powers causes the cells to become "outlaws." Physicians engaged in biochemical research have brought several interesting

things to light. One found aluminium deficient or absent; another found manganese absent; a third found sodium in great excess in the bodies of cancer victims. In each case the result came from careful analyses. The results may be too meager for the establishment of a conclusion, but they cannot be thrown aside as irrelevant.

Indirectly they point to geographic environment as a possible factor. The food of humanity is derived from the soil; and if plant life is affected pathologically by a redundancy or by a deficiency of soil elements, why not human life? The theory of such a connection may be far-fetched, but it indicates that an unexplored field is open for research. In regarding soil constituents as a factor, one may bear in mind that the potato responds wonderfully to soil conditions. And the potato is not a product of health; it is a pathogenic product which corresponds to the non-malignant tumor of the human body. The geographic distribution of cancer is almost a neglected field of research. Is it important? If not, why the contrast between Oakland and San Francisco?—or between urban and rural communities?—or between negro and white?

In hunting down the greatest enemy to humanity in western civilization every lead no matter how trivial must be followed. The Federal Government is spending a sum estimated from one hundred to three hundred millions of dollars in the attempt to suppress alcoholism; it is spending nothing to find a protection against cancer; yet in 1920 for every death from alcoholism there were eighty deaths from cancer.

The foregoing article is not written for the purpose of advancing any theory of my own. It is designed to broaden the field of research. Possibly my conclusions are in error; if so, no one will be more grateful than I should they be pointed out. Research has but one end in view—namely, to establish truth.

Drug Eruptions

(Continued from page 133)

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My thanks are due to Prof. Fordyce for the courtesy of the photographic room, and for the clinical material at my disposal.

Public Health

Campaign for Cancer Control Now Under Way in New York State

The campaign activities of the New York State Committee of the American Society for the Control of Cancer was begun. The following methods are being employed in broadcasting publicity on the nature and control of cancer: (1) distribution of literature, (2) addresses before clubs and other lay organizations, (3) publication of special articles and editorials in local newspapers, (4) the reading of a letter in the churches, (5) motion picture films on cancer, (6) radio broadcasts on cancer control, and (7) organization of cancer clinics.

Last year, so far as reports were received, the American Cancer Society reached about 100,000 people in New York State. It should reach 1,000,000 this year. It desires that every county medical society in the State have at least one paper on cancer read at one of its meetings during the month. It wants every training school for nurses to have a special lecture on cancer given to its graduating class during that period and every dental society in the State to listen to a paper on cancer of the lip, tongue and mouth during the same period.

Child Labor in New York State

According to statistical data from January 1, 1910 to December 31, 1920 which have been recently compiled by the State Department of Labor there were at the close of that period 47,024 fourteen and fifteen year old children gainfully employed in the State of New York. This number represents 14 per cent of all children of those ages in the State. In the first and second class cities the percentages of working children of this age group is as follows: New York, 18 per cent; Rochester, 17; Buffalo, 15; Syracuse, 14; Albany, 11; Yonkers, 11 per cent.

In 1913 the number of children found illegally employed was 3,561, of whom 1,023 were under 14 years of age. The proportion of girls entering clerical positions and of boys in manufacturing and clerical work has greatly increased during the ten years period.

Chiropractors Are Barred

Chiropractors can not be permitted to send patients to the Jamestown, N. Y., General Hospital or to treat patients there, unless the treatment is carried out with the consent and under the supervision of a licensed practitioner of medicine, according to an opinion by Corporation Counsel Cawcroft.

"The City Hospital is the creation of the charter and the general laws of the state," says Mr. Cawcroft. "Those laws contemplate the admission of patients for medical treatment by licensed physicians and not by someone else." If a chiropractor can not give medical treatment, Mr. Cawcroft says the board is not justified in admitting his patients or permitting them to remain on the premises. "On the other hand," he adds, "if the chiropractor asserts that he does give medical treatment, then the board is in the position of permitting such chiropractor to violate the law on the premises under his control, because it is a penal offense for anyone but a licensed physician to give medical treatment." Mr. Cawcroft's opinion appears to cover the legal points bearing on this question very fully and clearly.

Do Height and Weight Tables Identify Undernourished Children?

A study to determine the degree to which physicians and nutrition workers can safely trust the weight tables ordinarily used in selecting undernourished children, recently completed by Louis I. Dublin, Statistician of the Metropolitan Life Insurance Company and John C. Gebhart, director of the department of social welfare of the New York Association for Improving the Condition of the Poor, has been published in pamphlet form by the latter organization from its office at 105 East 22nd Street, New York. Eight charts illustrate the salient features of the text.

(Continued on page 144)

The Physician's Library

Endocrine Diseases. By William Falta, of Vienna. Translated by Milton K. Meyers, M.D., of Philadelphia. 3rd Edition. 669 pages. Philadelphia: P. Blakiston's Son & Co. 1924.

Presumably the half has not been told of the endocrine diseases but every year adds to our knowledge of the importance of everything having to do with the internal secretions. When one considers that but a comparatively few years ago the ductless glands were a no man's land one realizes the tremendous strides made in this subject. To Falta the medical profession is indebted to a considerable extent for a great increase in its knowledge of endocrinology.

We have now reached the point where we realize that very many conditions which have been common, and which in many instances have seemed to be beyony our ability to handle, are due to glandular disturbances. We know also that many of these diseases are entirely capable of being corrected by carrying out pluriglandular treatment in some form or other. The profession is aided in its study of endocrine diseases by the splendid exemplification thereof set forth in this book. The author has gone into the subject thoroughly and has touched the very foundations. The translator has given us a faithful and interesting reproduction of Falta's ideas, and all men interested in the subject will do well to go over this book with care.

National Health Series. 20 Volumes, edited by The National Health Council, written by leading health authorities. New York: Funk & Wagnalls Co., 1924.

This series is made up of a large number of books written by some of the best known men in their various lines in the United States. Each little volume contains about 18,000 words and they sell for 30c a volume.

Among the books which have already been brought out are "Cancer" by Dr. Francis Carter Wood, of Columbia; "Man and the Microbe" by Dr. Winslow, of Yale; "Community Health" by Dr. D. B. Armstrong, of the National Health Council; "Personal Hygiene" by Dr. Allan J. McLaughlin, of the Public Health Service; "The Human Machine" by Dr. Wm. H. Howell, of Johns Hopkins; "Taking Care of your Heart" by Dr. T. Stuart Hart, of New York; "The quest for Health" by James A. Tobey, of the National Health Council; "The Young child's Health" by Dr. H. L. K. Shaw, of Albany Medical College, and several others equally interesting and instructive.

These books are non-technical and are intended to fill the necessities of the general public. As such, they are exceedingly useful and we doubt not the series will be read with much interest by a large number of the laity.

Geriatrics. By Malford W. Thewlis, M.D. 401 pages. St. Louis: C. V. Mosby Co., 1924.

Dr. Thewlis presents the second edition of his very interesting treatise on the prevention and treatment of the diseases of the aged, and to the material which appeared in the first edition he has added a number of chapters, the most important of which is devoted to electrotherapy and opotherapy. To the physician who is handling old people this book will prove of very great benefit. The subject is well presented and is interesting.

The Antidiabetic Functions of the Pancreas, etc. By Professors J. J. R. Macleod and F. G. Banting, of the University of Toronto. St. Louis: C. V. Mosby Co., 1923.

This is the essay which won the $40,000 Alfred Nobel Prize for the year 1922, and it sets forth the methods by which the authors isolated the antidiabetic hormone known as Insulin. It is naturally one of the greatest contributions ever made to medicine.

Practical Dietetics. By Alida F. Pattee. 646 pages. Published by the Author, of Mt. Vernon, New York. 1923.

Miss Pattee produces with this volume the 14th edition of her most excellent book. It has been thoroughly revised and entirely brought up to date, meeting every dietetic necessity. For years this work has benn a standard and it leaves very little to be desired in the way of dietetic information.

Fighting Foes too Small to See. By Prof. Joseph McFarland, of the University of Pennsylvania. Philadelphia: F. A. Davis Co., 1924.

The series of lectures delivered at the Wagner Free Institute of Science in Philadelphia is published under this title. They constitute a course in microbiology. It sets forth in popular knowledge what the public ought to know about this very interesting subject and the matter has been splendidly handled.

Applied Pathology in Diseases of Nose, Throat and Ear. By Joseph C. Beck, M.D., of the University of Illinois. 280 pages. St. Louis: C. V. Mosby Co., 1923.

The author gives herein a splendid demonstration of the pathology of the diseases of the organs in question. It is not a book that will have a popular appeal but to those men who are doing special work, it contains much of value. The illustrations are very illuminating and the reviewer can commend it to those who are following out this line of work.

Public Health

(*Concluded from page* 143)

The movement for improving the nutrition of children has been extensively developed during recent years on the assumption that the weight of the child was a very safe, and, by some, an infallible guide by which the nutrition worker could in the first instance single out those who needed attention. Many physicians and nutrition workers have, however, found difficulties and discrepancies from time to time which tended to indicate that all was not well with the method. In the study in question it has been possible to determine definitely, for one group of children, at least, whether underweight and under-nutrition are, in fact, synonymous terms and, if they are not, to what extent those who have followe the usual methods have probably erred.

The materials at the disposal of Messrs. Dublin and Gebhart consisted of the examination records of 1878 boys and 2169 girls under the care of the Association in its health work among the Italians in the Mulberry district of New York City. The Association was careful to place this work under the direction of a prominent pediatrician, Dr. L. C. Schroeder, who examined the apparently well children coming under the observation of the health center. The dictor's diagnosis of defective nutrition was based on the picture of the whole child and not on weight and height alone. Such items as the state of musculature, the lustre of the eyes, the color and bearing of the children, their posture and the relative amount of subcutaneous fat were all taken into account in assessing the child's nutrition. In addition, the physical measurements of height and weight were given careful consideration in relation to the child's age.

It was found that 77.2 per cent. of the boys and 67.1 per cent. of the girls who were actually undernourished, would have been missed entirely, if reliance had been placed solely on the standard weight tables with the 7 per cent. limit of underweight. The table using the ten per cent. limit would have caused to be overlooked 89.8 per cent. of the undernourished boys and 81.8 per cent. of the undernourished girls.

In the case of well-nourished children, the tables operated in closer agreement with actual conditions, as was shown by the fact that 97.6 per cent. of all the boys and 94.5 per cent. of all the girls who were found by the doctor's examination to be well nourished, would also have been so selected by the standard weight tables.

The worst results in the operation of the standard weight tables were apparent among the youngest children. Under age 6, only the smallest number of undernourished boys would have been selected by the weight tables. At age 3, for instance, as few as 7 per cent. of the total number of children found by the physician actually to be undernourished, would have been selected under the 7 per cent. table, and at age 5, less than 2 per cent. by the 20 per cent. limit table. The figures for the girls were somewhat better, although they, too, were quite low. The survey continues:

"The trouble with the use of the standard weight tables in finding children in need of nutritional care is not that those singled out are bady chosen but rather that not enough of them who are truly malnourished are found by this method. Underweight is a sharp enough index of malnutrition, but it does not cut off a big enough segment of those who should be included."

The survey concludes that "a diagnosis of nutrition should be made in every case only after a careful physical examination by a competent physician." In communities where it is impossible to give every child a thorough physical examination it is suggested that "selection be made as heretofore of all the children who are 7 per cent. under weight, but only as a first measure. These children will be found on examination to be, for the most part, malnourished. Possibly from one-quarter to one-third might have been excluded by the physical examination, but no great harm can be done by their inclusion. But, this entire group of under-

(*Continued on page* 26)